

NAVAL POSTGRADUATE SCHOOL

Monterey, California



THESIS

**FOREIGN MILITARY SALES: IMPROVING CONTRACT
CLOSEOUT PROCEDURES USING PROCESS
INNOVATION**

by

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December 2000

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**FOREIGN MILITARY SALES: IMPROVING CONTRACT CLOSEOUT
PROCEDURES USING PROCESS INNOVATION**

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Submitted in partial fulfillment of the
requirements for the degree of

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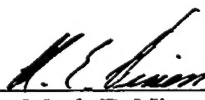
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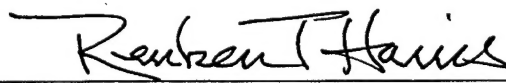
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ABSTRACT

In 1968, the Foreign Military Sales Act was written with a primary objective of facilitating the common defense by entering into international arrangements with friendly nations. Shrinking defense budgets have shaped an industrial base that is dependent on foreign markets in order to survive. Both the Federal Acquisition Regulation (FAR) and Defense Federal Acquisition Regulation Supplement (DFARS) provide detailed guidance for negotiating contracts with foreign countries and stipulate that U.S. laws apply regardless of foreign policy. The FAR also provides the procedural requirements for the contract closeout process. Often the process is not completed in a timely or proper manner, resulting in noncompliance with contract closeout time frames, increased backlog, dissatisfied customers and significant monetary ramifications.

The primary purpose of this thesis is to review the management of the contract closeout process and analyze it using process innovation tools. The FAR lists 15 specific Administrative Contracting Officer contract closeout steps that must be completed once a contract is deemed physically complete. Those steps are depicted using KOPeR methodology to identify process pathologies and shortcomings. Further, it develops two redesign alternatives that offer good potential to further streamline the process.

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I. INTRODUCTION

A. GENERAL

This thesis reviews the management of the contract closeout process within selective Department of the Navy contracting activities that participate in the Foreign Military Sales (FMS) Program. The process is examined to determine if it is performed in an effective manner using the Davenport framework for process innovation to identify areas that impede the process. Specifically, selected FMS cases supported by the International Programs Directorate at the Naval Inventory Control Point Philadelphia (NAVICP) are examined to identify problem areas and recommend solutions to streamline the procedure.

B. BACKGROUND

In 1968, the Foreign Military Sales Act was written with a primary objective of facilitating the common defense by entering into international arrangements with friendly countries. It clearly gave the United States the authority to:

Facilitate the common defense by entering into international arrangements with friendly countries which further the objective of applying agreed resources of each county to programs and projects of cooperative exchange of data, research, development, production, procurement and logistics support to achieve specific national defense requirements and objectives of mutual concern. [Ref. 1]

Simultaneously, the Act consolidated all existing legislation concerning Foreign Military Sales and revised provisions of other pertinent legislation, thus setting the guiding policy by which the United States proceeds in military sales.

Shrinking defense budgets have shaped an industrial base that depends on foreign markets to survive and prosper. In lieu of waning defense dollars, the United States still manages to sell and deliver more arms than any other nation. [Ref. 2] For fiscal years 1997, 1998 and 1999, United States sales to foreign governments totaled \$7.9 billion, \$8.3 billion and \$12.2 billion, respectively. [Ref. 3] With a worldwide sales figure of \$23 billion, last year the U.S. captured 46 percent of the market share. This dominance is likely to continue as defense budgets dwindle and reliance on foreign markets grow. Pending sales to such countries as Israel and the United Arab Emirates (UAE) support this trend. If the United States closes these deals, they will supply Israel with two and a half billion dollars in F-16 Fighter aircraft and the UAE with eight billion dollars in aircraft. [Ref. 4]

The Arms Export Control Act is the authorization document that allows the Department of Defense to enter into contractual agreements for sales to foreign countries and international organizations. These acquisitions under the Foreign Military Sales program follow the same contract management procedures as other defense acquisitions.

Although the Defense Federal Acquisition Regulation Supplement (DFARS) provides detailed guidance for negotiating contracts with foreign countries, and stipulates that U.S. laws apply regardless of foreign policy, the Federal Acquisition Regulation (FAR) provides the procedural requirements for the contract closeout process. The FAR delineates 15 specific actions that must be taken prior to signing a contract completion statement. Often, the process is not completed in a timely or proper manner, resulting in noncompliance with contract closeout time frames, increased backlog, dissatisfied customers and significant monetary ramifications.

C. RESEARCH QUESTIONS

1. Primary Research Question:

What are the principal factors that affect the contract closeout process applied to Foreign Military Sales, and what improvements can be imposed to streamline the process?

2. Secondary Research Questions:

- What is the background and history of the Foreign Military Sales program?
- What is process innovation, and how can it be applied to operational processes?
- How does the current contract closeout process function, and what problems or shortcomings exist?
- What enabling technologies and managerial instruments can be applied to improve process performance?
- What steps should be taken to migrate from the current contract closeout process?
- How can results from this thesis be generalized to other organizations and processes?

D. SCOPE AND ORGANIZATION

This thesis reviews the systemic and procedural problems that arise while executing the contract closeout requirements and determines if a more efficient approach could be adapted using process innovation.

The study focuses on the data from interviews conducted with various personnel at the International Programs Directorate at the Naval Inventory Control Point, Defense Contract Management Agency, and other Department of Defense Agencies that play a role in executing closeout procedures with open FMS cases. The research identifies the

source and impact of untimely closeout actions in order to recommend a more streamlined process for implementation.

This thesis is arranged in five chapters. In this chapter, general information is defined, including the purpose of this research, background information is provided, the scope and organization of the research is stated and methodology for data collection is detailed.

Chapter II outlines the history of the Foreign Military Sales program and the Davenport Model for process innovation.

Chapter III delineates the procedural requirements to closeout a FMS case and the specific functions of the Administrative Contracting Officer in specific contract closeout. It also defines terminology germane to the contract closeout process, including the organizations involved and prescribed timeframes. Furthermore, it addresses past reviews of the contract closeout process and the adverse affects that untimely closeouts have in the Department of Defense.

Chapter IV presents data collected via interviews with individuals closely involved with the closeout process, to help identify culprits of untimely or inefficient closeout procedures, identify enablers of change and process redesign alternatives.

Lastly, Chapter V presents conclusions and recommendations for process improvement and identify areas for further research.

E. METHODOLOGY

The primary research methodology employed was an exhaustive review of pertinent literature available through the Dudley Knox Library and the World Wide Web.

The literature review provides the researcher with the necessary background to utilize a process innovation framework to invoke change. Additionally, directives, instructions and current policies from key Department of Defense organizations are reviewed to obtain supplemental background information.

The secondary research methodology utilized is a series of interviews with Integrated Country Program Managers from the International Programs Directorate at the Naval Inventory Control Point Philadelphia (NAVICP), personnel at the Defense Security Cooperation Agency (DSCA), Administrative Contracting Officers (ACOs) from the Defense Contract Management Agency (DCMA) and case reconciliators from the Defense Finance and Accounting Service (DFAS).

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II. FOREIGN MILITARY SALES PROGRAM

A. INTRODUCTION

The first part of this chapter focuses on the Foreign Military Sales Program. It gives the reader the necessary background to understand the statutory premise on which the program exists, how countries become eligible to participate, how they participate and how the process is executed leading to closed out. The second part of the chapter describes Davenport's model for process innovation to enable the closeout process to be framed using this approach in Chapter III.

B. FMS BACKGROUND

1. Purpose

The United States Government (USG), as stated by the Congress, realizes that the efforts to promote peace made in conjunction with other friendly nations requires measures of support built on the notion of effective self help and mutual aid. While the USG encourages regional arms control and disarmament agreements, it also recognizes that valid defense requirements exist for the U.S. and other countries. Arms sales have therefore emerged to fulfill this need while simultaneously providing an alternative to the difficult and often uneconomical practice of providing for all of a country's legitimate defense requirements solely from its own industrial base. [Ref. 5] The benefits of the Foreign Military Sales program include increased prospects for regional stability, decreased likelihood of U.S. military involvement in certain regions, increased

standardization among U.S. allies, a sustained U. S. production base, increased U.S. employment, and reduced research, development, and unit production costs. [Ref. 6]

2. FMS Authorization Acts

Two basic congressional authorizations serve as the basis for selling defense articles to foreign governments. The Foreign Assistance Act (FAA) was originally enacted on 4 September 1961 and is the authorizing legislation for a multitude of programs, including a wide variety of foreign assistance programs. The Arms Export Control Act (AECA) came into being under the Foreign Military Sales Act of 1968 (FMSA) but was changed to its current name in 1976. The AECA is the statutory basis by which the United States Government can conduct Foreign Military Sales, provides funding for the Foreign Military Financial Program, and controls commercial sales of defense articles and services. [Ref. 5]

3. Eligibility

Before the U.S. can sell military items to a foreign country, the country must be deemed eligible to participate. As stated in both the FAA of 1961 and the AECA, eligibility requires that the U.S. President only grant military assistance or support the sale of arms once it's been established that, "...the furnishing of defense articles and defense services to such country or international organization will strengthen the security of the United States and promote world peace...."[Ref. 5] To document the approval, the President must provide a written "Presidential Determination" which takes the form of a "Memorandum for the Secretary of State." The determination, in itself, does not preclude the USG from denying a sale. Each request from a foreign country or international organization is subject to review by the Secretary of State to ensure accordance with U.S.

law and policy objectives. [Ref. 5] For example, as stated in Section 3(a) of the AECA, the following criteria must be met before a Presidential Determination approves a sale for a country [Ref. 5]:

- the President finds that the furnishing thereof will strengthen the security of the U.S. and promote world peace
- the country (or international organization) has agreed not to transfer title to, or possession of, any articles/services (including training) so furnished to it by the U.S., unless the consent of the President has first been obtained
- the country (or international organization) has agreed to provide substantially the same degree of security protection afforded to such article or service by the USG
- the country (or international organization) is otherwise eligible to purchase defense articles/services

Likewise, no assistance will be furnished to countries that support international terrorists, are communists, are indebted to any U.S. citizen for goods or services, are engaged in illicit drug production or drug trafficking to name a few.

On or before 1 February, the President is required to transmit to Congress the annual "Arms Sales Proposal," which covers all sales, including FMS and licensed commercial exports. Generally referred to as the "Javits Report," it is specifically concerned with the sale of major weapons or weapon-related defense equipment for \$7M or more, or of any other weapons or weapons-related defense equipment for \$25M or more, which are considered eligible for approval during the current calendar year. [Ref. 5]

4. FMS Process

Foreign countries may request to purchase a myriad of defense articles and services from the U.S.. Common FMS requests include major weapon systems, spare

parts, technical manuals, training and ammunition. To begin the process, once the President has determined eligibility, the requesting country must submit a Letter of Request (LOR). There are two channels for submission, depending upon whether the request is for "Significant Military Equipment" (SME) or for non-SME. SME are those items which warrant special export controls because of their capacity for substantial military utility as designated in the International Traffic in Arms Regulation. [Ref. 5] For example, under Major Defense Equipment category one, Firearms, the M16 rifle series is considered SME; items under category ten, Personal Protective Equipment, are not considered SME. [Ref. 6]

If a requested item is designated as SME, it should be transmitted by the U.S. Embassy directly to the implementing agency. The U.S. Embassy will assess the various aspects of the LOR, including a statement of the reason why the nation desires the weapon system and its anticipated reaction on neighboring countries.

For all other FMS (non-SME), either the customer country's authorized representative, or the Department of Defense (DoD) element of the U.S. country team, transmits requests directly to the implementing agency. In both cases, information copies are provided to the Bureau of Political-Military Affairs in the Department of State (SECSTATE/PM), the Defense Security Cooperation Agency in the Office of the Secretary of Defense (SECDEF/DSCA), and the appropriate unified command.

Although there is no prescribed format for drafting the LOR, certain information is expected. The LOR should clearly state if it is a request for Price and Availability (P&A) or a request for a Letter of Offer and Acceptance (LOA). Price and Availability

LORs are provided for planning purposes only, and show the estimated cost and anticipated availability of the defense article requested. P&A data will normally be provided within 45 days of receipt of the request, but this does not constitute LOA data. The information provided is only preliminary data and does not bind the USG into a contractual agreement with the requesting nation.

Letters of Request are initially received and processed by the applicable Implementing Agency (IA) "Action Officer." For the Navy, the IA authority lies within the Navy's International Program Office (Navy IPO) in Washington, D.C. Among other things, the IA uses a standard LOR checklist to ensure the requesting country or international organization is eligible to purchase the defense articles requested. The LOA data estimates are provided by the applicable service item manager and are traditionally based on vendor quotes or on the desired items' current cost. In major weapon system cases, Navy System Commands compile and complete LOA data. Whoever is assigned the FMS case manager responsibilities, coordinates the necessary cost, schedule and configuration data to prepare the subsequent LOA. The figure below shows a major weapon systems sale within the Department of the Navy, including the IA, major system command and inventory control point item manager:

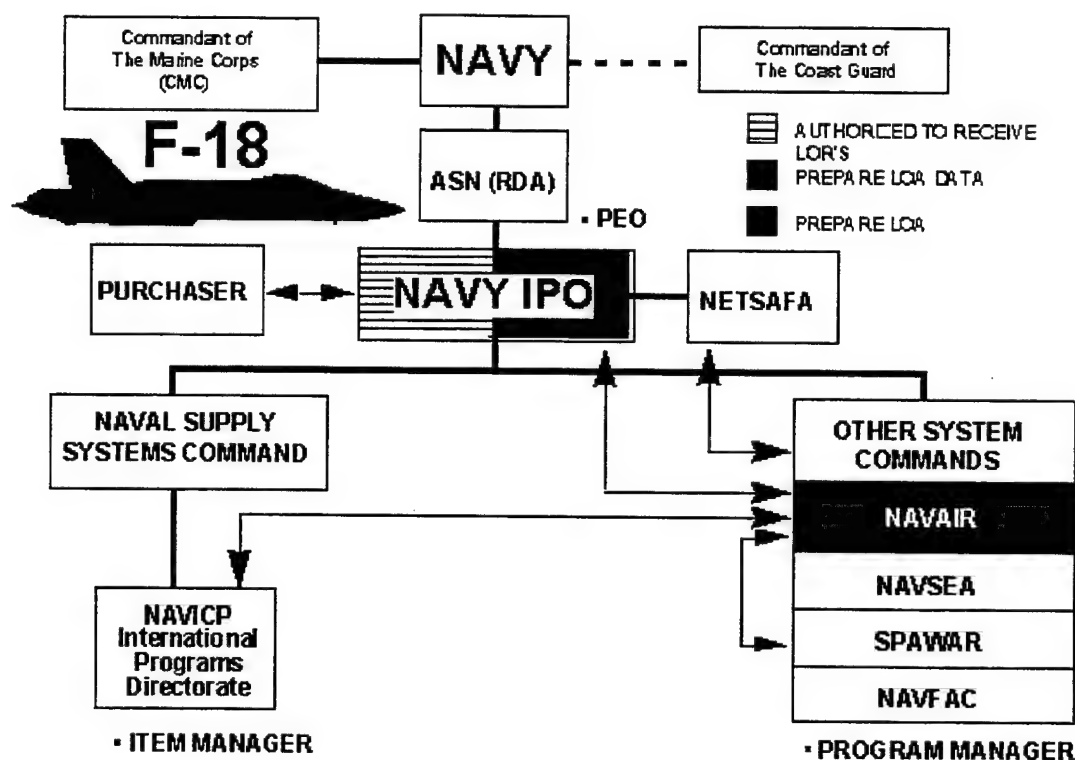


Figure 1. From DISAM Greenbook.

The Letter of Offer and Acceptance is the USG's authorized document, which offers to sell defense articles and services to the requesting country or organization. [Ref. 5] It lists the items or services being offered, estimated costs, sources of supply, estimated supply lead times and terms of the sale. [Ref. 7] The offer becomes a contract once the requesting country or organization accepts it and applicable funding is provided. Prior to June 1992, the LOA was a DD Form 1513; both are foreign military sales "cases." Each LOA or DD Form 1513 is assigned a unique case identifier, distinguishing the country to which it pertains and the cognizant Implementing Agency (IA).

Once the IA receives the LOR, they have 60 days to write the LOA and forward it to the Defense Security Cooperation Agency (DSCA) for countersignature. Once the

countersignatures are obtained, the LOA is forwarded to the requester for acceptance.

One caveat to this process is cases that meet the following thresholds:

- \$14 million of major defense equipment
- \$50 million or more of total case value
- \$200 million or more of design and construction service [Ref. 5]

If any of these three thresholds are met, Congress must be notified of the potential purchase, including requesting country, dollar value, description of the defense articles or services, a statement of "military justification" for the transfer and a statement addressing the sensitivity of the technology involved.

Implementing Agencies, when dealing with significant or major weapon systems, ensure their responses fulfill the FMS policy of total package approach. This concept helps educate the potential FMS customer of all necessary support articles and services necessary to sustain operability of the major weapon system. Under the total package approach, training, technical assistance, initial support and follow-on support are discussed in detail. [Ref. 5]

The purchaser is given 60 days upon receipt of the LOA to accept or reject. If they accept, the signed LOA is forwarded to the military department and Defense Finance and Accounting Service-Denver Center (DFAS-DE/I) with initial payment. Payment must be in U.S. dollars and may be transmitted by check or wire transferred to the Department of the Treasury account at the Federal Reserve Bank of New York. Once the signed LOA and confirmation of an initial deposit is received, DSCA enters the case into their data system and the case is ready for implementation. Subsequently, DFAS-DE/I releases obligational authority to the IA.

The USG typically fulfills the FMS program requirements by procuring new items from industry or from Government stock. FMS requirements are often consolidated with existing domestic requirements or can be placed on separate contracts, depending upon which method provides the defense articles or services in the most expedient and cost effective manor.

Although the LOA provides authority for a given FMS case, it is not sufficient, in itself, to implement the case. A case directive is needed as the "go between" for the LOA and the actual material requisition specified in the LOA. The case directive takes general information from the LOA and adds the detail the implementing field activity needs to proceed. For example, a case directive might state the obligation authority control number, delivery instructions, issue priority or required availability dates. [Ref. 5] As an extension of the LOA, it should follow any amendment or modification to an existing LOA. The Figure 2 outlines the FMS process.

5. Case Closure

A case becomes a candidate for closure after a multitude of actions have been completed or resolved. One of those includes the physical delivery of all ordered items or the performance of all ordered services. One of the major hindrances to case closure is the final settlement of long-running contracts in which the FMS case is a part. [Ref. 5] Administrative Contracting Officers are tasked with ensuring the steps delineated in the FAR are completed in the closeout process and therefore can have a significant effect on the closeout process. The physical completion of the contract or contracts, which constitutes the case, is the starting point for closeout procedures and the focal point of analysis in the following chapter.

PHASES
(TIME)

Preliminary
(Undefinite)

Country Determines Its Requirements

Requirements Are Compared to U.S. Forecast

Definition
(Undefinite)

Country Obtains System Information

Country Identifies Specific Systems

U.S./Country Exchange Technical Information

Request
(Undefinite)

Country Submits Letter of Request

Offer

MILDEP Receives LOR

(LOA Development-
60 days/policy)

LOA Data is Developed

MILDEP Writes LOA

(Congressional Review
Policy: 15 days NATO
50 days Non-NATO)

State/DSAA/Congress Review LOA

MILDEP Receives Accepted LOA

Acceptance
(60 days/Policy)

Country Accepts LOA

DFAS-DE/I Receives Accepted LOA & Initial Deposit

MILDEP Receives Accepted LOA

Implementation
(20-30 Days Average)

DFAS-DE/I Issues Obligation Authority (OA)

MILDEP Issues Implementing Directive

MILDEP Activates FMS Computer Systems

Execution
(Relates to Delivery
Time Frame)

LOA Managers Order Articles/Services/Training

Articles/Services/Training Shipped/Performed

MILDEP Reports Performance to Customer & DFAS-DE/I

Closure
(Policy-2 Years
From last Delivery)

MILDEP/DFAS-DE/I/Country Reconcile Records

MILDEP Sends "Closure Certificate" to DFAS-DE/I

DFAS-SE/I Issues "Final Bill" to Customer

Figure 2. FMS Process from DISAM Greenbook.

C. PROCESS INNOVATION

This section distinguishes between process innovation and process improvement. Further, it outlines the framework for process innovation that consists of five key steps that can be applied to any business process in hopes of achieving better efficiency and effectiveness.

1. Innovation vs. Process Improvement

A process is a structure for action. Innovation, in its simplest definition, is the idea of introducing something new. Process innovation, then, combines “the adoption of a process view of the business with the application of innovation to key processes.” [Ref. 8] What makes process innovation distinct is its potential to bring about major or radical change to the way an organization does business. The business objectives of process innovation could be improvements in quality, reduction in cycle time, cost reduction, or heightened service levels. Davenport defines process innovation as:

Stepping back from a process to inquire into its overall business objective, and then effecting creative and radical change to realize order-of-magnitude improvements in the way that objective is accomplished. [Ref. 8]

Process improvement, on the other hand, seeks incremental change. Instead of looking for drastic change, process improvement takes an existing practice and improves it through slightly increased efficiency or effectiveness. The incremental benefits can be achieved in a relatively short time period, whereas the road to achieving process innovation is much longer. The following chart depicts the major differences between process innovation and process improvement.

	<i>Improvement</i>	<i>Innovation</i>
Level of Change	Incremental	Radical
Starting Point	Existing Process	Clean Slate
Frequency of Change	One-time/continuous	One-time
Time Required	Short	Long
Participation	Bottom-up	Top-down
Typical Scope	Narrow, within functions	Broad, cross-functions
Risk	Moderate	High
Primary Enabler	Statistical Control	Information Technology
Type of Change	Cultural	Cultural/structural

Table 1. Process Improvement versus Process Innovation.

2. Davenport's Methodology

Thomas H. Davenport provides a framework for process innovation involving five systematic steps: 1) identifying processes for innovation, 2) identifying change levers, 3) developing process vision, 4) understanding existing processes, and 5) designing and prototyping the new process. Each step is further explained below.

a. Identifying Processes for Innovation

This step within the Davenport framework can be categorized into five key considerations. In general, it requires early thought and determination and is crucial for an organization to achieve a successful outcome.

(1) Enumerate Major Processes. There is often much disagreement within and across organizations pertaining to what constitutes a major process. Identifying numerous processes in the initial stages is appropriate, but research

has shown that setting the number of major processes at between 10 and 20 maximizes the possibility of trade-off between managing process interdependence while ensuring the scope is manageable. [Ref. 8]

(2) Determine Process Boundaries. Once the processes have been identified, the boundaries have to be set. Since process management is often seen as a domino effect, where changing one process has a subsequent effect on another, determining the appropriate boundaries requires the organization to consciously define where one process ends and another one begins.

(3) Assess Strategic Relevance. With major processes identified and boundaries set, an organization can now focus on the specific process to be innovated. An organization's resources, including manpower, funds and time, generally restrain simultaneous change over multiple processes. Anticipating these disruptions is key to ensuring the chosen processes can be innovated successfully.

(4) Render High-Level Judgments of the "Health" of Each Process. Those processes that are labeled "unhealthy" or problematic are generally good candidates for process innovation. Prioritizing processes that need obvious improvement will determine the order to apply process innovation techniques to induce change within an organization.

(5) Qualify the Culture and Politics of Each Process. Both the organization's cultural environment and political climate must be assessed before selecting a process for innovation. Together, they should represent a pressing need for change to improve a key competency and be championed.

b. Identifying Change Levers

Change levers help "lift" a process in the direction it needs to go. They are as follows:

(1) Identify Potential Technical Factors for Process Change.

This considers information technology (IT) as a contributing factor to invoke change. However, it also warns an organization not to solely rely on information technology solutions to solve problems. Information technology is only one of several enablers to process innovation. [Ref. 8]

(2) Identify Potential Organizational Factors for Process

Change. Organizational enablers for process innovation are categorized as either structural or cultural. When changing the organization's structure to facilitate successful process innovation, research has concluded that structuring process performance by teams is more productive than individual-based work designs. The team concept combines multiple functions into one unit, exploiting the strengths of several personnel vice one.

Cultural shifts rely on moving away from stringent hierarchical controls to greater empowerment and participation in decision making. In general, process innovation is not a bottom-up activity. However, a culture that encourages participation from all levels is more likely to experience higher productivity by successfully implementing process innovation.

(3) Identify Potential Human Resource Enablers of Process

Innovation. This step focuses on the way an individual worker is trained, motivated, compensated and evaluated vice how their work is structured. Process innovation

requires new processes. Therefore, new skills or even new employees might be necessary. All of this must be considered, along with what motivates an individual and how they are compensated, before invoking a radical change.

(4) **Identify Potential Constraints.** In this step, it is paramount to identify those factors within an organization that constrain technical, structural, cultural or human resource enablers. This can be as simple as identifying organizational and cultural structures that favor individual functions vice cross-functional processes. Removing these constraints before or concurrently with process innovation inventiveness is key to success.

*c. **Developing Process Vision***

Previously, key processes have been identified as potential candidates for change due to their influence on the organization's overall mission and strategy. This phase engrains the process vision into the organizational structure to ensure that it can be sustained and championed. Developing a process vision is broken down into five steps.

(1) **Assess Existing Business Strategy for Process Direction.** A well-defined strategy is "antecedent to a process innovation initiative." [Ref. 8] The strategy serves as the guiding vision for how a process should work in the future. The strategy must also incorporate a balanced mix of both financial and nonfinancial goals, while being measurable and long term.

(2) **Solicit Customer Inputs.** To help create a process vision, a customer's perspective on a key process helps furnish performance objectives. Although customers generally provide input that only foster incremental improvements, they are necessary to help focus on the area that needs innovation initiatives. Consulting with

customers during this step, either formally or informally, will aid in implementing significant process innovations.

(3) **Benchmark for Process Objectives.** Benchmarking has many benefits, including identifying realistic performance objectives and target characteristics that an organization can strive to achieve. Since benchmarking requires an “outsider” viewpoint, it often helps organizations divert their internal focus outward, and thus gain a fresh or broader perspective. In terms of process innovation, benchmarking is most effective when processes are chosen because they are superior, despite the specific industry from which they come.

(4) **Formulate Process Performance Objectives.** In this step, the organization derives process objectives based on the process vision and existing strategy. The process objectives are placed in terms that are quantifiable and represent radical change. For example, a firm with a vision of being a world leader in pharmaceutical sales might determine it must adopt a process objective to reduce new drug-development cycle time by 50%.

(5) **Develop Specific Process Attributes.** This step focuses on providing simple descriptive and nonquantitative statements that represent the organization’s philosophy and vision. These attributes can be viewed as principles of process operation and address both process characteristics and specific process enablers.

d. Understand Existing Processes

To recommend process changes, it is important to first understand the process that requires redesign. Davenport lists four reasons why documenting the existing process is preemptive to proceeding with innovation. [Ref. 8]

- Understanding existing processes facilitates communication among participants in the innovation initiative
- In most complex organizations there is no way to migrate to a new process without understanding the current one
- Recognizing problems in an existing process can help ensure that they are not repeated in the new process
- Understanding the current process provides a measure of the value of the proposed innovation

e. Design and Prototype the New Process

The fifth and final step to the Davenport framework for process innovation relies heavily on the personnel designing and implementing the new process. By the final stage, all the preliminary data have been collected and analyzed. The task is now to take the information and synthesize it creatively into a new process, while ensuring it can be implemented. The following are key activities during the final stage:

(1) **Brainstorming Design Alternatives.** Using brainstorming as a facilitation technique ensures all team members feel free to participate and offer solutions without retribution. The objective is to, "...develop creative, but pragmatic new process designs, taking as input the process vision, change enabler, and benchmark knowledge developed in earlier phases of process innovation." [Ref. 8]

(2) **Assess Feasibility, Risk and Benefit of Design Alternatives and Select the Preferred Process Design.** Brainstorming sessions typically yield several design alternatives. Each alternative must be reviewed for feasibility, risk, and relative benefit, to select the best overall design.

(3) **Prototype the New Process Design.** Prototyping allows the user to simulate and "test" the new design in a controlled setting to see if it will achieve the desired outcome. Prototyping is a cycle of testing and subsequent correction, which

could take several iterations. The designer makes small-calculated adjustments to fit the model to the real world scenario.

(4) Migrating to the New Process. Once the prototype proves successful, the challenge is orchestrating a smooth and transparent transition from the old to the new process. Often, the migration will take place on a small scale, called a pilot, which is fully operational but will not completely disrupt the organization. Once the pilot has been performed without overriding problems, the rest of the process or organization is transitioned by phases.

(5) Implement a New Organizational Structure and System. Finally, assuming all the previous four Davenport steps have been taken successfully, the migration strategy is executed and the organization is shaped to facilitate the new process innovation. Typically, organizations are structured based on either function or product with little concern about process orientation. A balance must be found in structure that will foster the innovation and not hinder its implementation.

(6) Knowledge-Based Organizational Process Redesign (KOPeR). Davenport contends that selecting a process for innovation is an important condition to invoking non-incremental change in an organization. An overall understanding of the process is essential and Davenport lays out a five-step framework to approach any process that is key to achieving a business objective. What is missing, however, is a specific methodology that can be exercised to design and redesign a *modus operandi*. To complement the Davenport framework, Nissen offers a redesign method termed KOPeR (Knowledge-Based Organizational Process Redesign). KOPeR allows the user to target a process for redesign, design a graphical model that serves as the

baseline representation of the process, identify pathologies and shortcomings of the process, and generate reengineering alternatives. The following figure depicts the general redesign process of the KOPeR model:

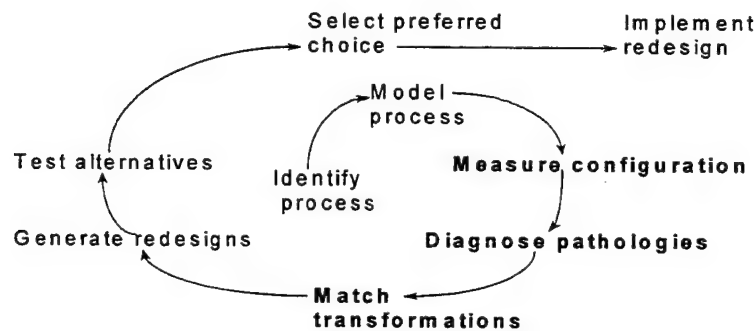


Figure 3. Acquisition Review Quarterly 1998.

f. KOPeR Redesign Methodology

The redesign process delineated above is represented in a spiral to symbolize the evolutionary sequence that characterizes the model. Step one begins with identifying a process for redesign. An appropriate candidate for redesign is one that is both stable and one that is able to be described in terms of its constituent tasks. Second, a model is developed to represent the “as-is” configuration of the existing process. Usually computer based, it is represented with nodes (process tasks) and subordinate process attributes such as 1) activity name, 2) role of the assigned agent, and 3) IT support. Graphing the model allows for a common starting point that leads to the third step in the evolutionary process, process measurement. Here, empirical measures are taken that highlight pathologies and shortcomings of the process flow. For example, the length of the process can be measured from its graphical representation by counting the number of

task nodes connected together in the longest path throughout the model. Step four, diagnose process pathologies, takes the process configuration measurements calculated in step three to identify and classify common process pathologies. For example, a review of IT support could detect a process pathology that signifies inadequate IT infrastructure as the pathology. In a case where manual processes and paper-based communications are relied upon as the primary means of exchange, an organization could be plagued with timely and costly delays that are solvable through an IT redesign.

The fifth evolutionary step is matching redesign transformations. In essence, it creates an "if" and "then" scenario. This step matches pathologies that were identified through process configuration measurements to an appropriate redesign transformation. In the IT example, "if" the pathology identified is a paper intensive process, "then" a redesign transformation might be implementing an email system for IT support. The sixth and seventh steps take the transformations from step five to generate and test redesign alternatives. Lastly, based on the outcome of the tests, the preferred redesign alternative is selected and implemented. [Ref. 9]

D. SUMMARY

This chapter describes the FMS process for the foreign customer working within the guidelines set by the United States Government. FMS legislation forces a heightened government oversight, which requires close coordination with several Federal Agencies. Concepts such as "cradle to grave" and "total asset ownership" necessitate an environment where both foreign customers and the USG are engaged from the initial LOR to the final contract closeout statement.

With FMS contributing to preserving a healthy defense industrial base, it is imperative to ensure that the USG is functioning in an efficient and effective manner from “cradle to grave.” Often the final step in the process, or closeout, is burdened with inefficiencies causing prescribed time frames set for closeout to be surpassed. The need to scrutinize the 15-step closeout process is critical in identifying the causes for these delays and offering innovation redesign solutions. Davenport’s framework and the KOPeR methodology provide a step by step model for identifying process inhibitors and implementing process innovation initiatives.

III. CASE AND CONTRACT CLOSEOUT

A. BACKGROUND

The Federal Acquisition Regulation (FAR) established guidelines for contract administration, of which closeout is one of the many functions. In Foreign Military Sales, case closure is not complete until the following actions have occurred:

- All procurement action has been completed
- All material has been delivered and all services have been performed
- A final statement of account has been provided
- Payment has been received from the customer for all charges billed. [Ref. 7]

Often this seemingly simple process takes longer than the prescribed timeframes and is marked with complexity involving several different contracting agencies. This chapter looks at the process of individual contract closeout and applies KOPeR tools to identify shortcomings and pathologies.

B. DEFINITION OF TERMS AND KEY PARTICIPANTS

The following terms and key organizations are defined for a common frame of reference when dealing with the closeout process.

- CONTRACT: An agreement between two or more parties, which is enforceable by law. It may be oral or written; however, FMS specific transactions are only binding in the written form. [Ref. 10]
- FMS CASE: A contractual sales agreement between the U.S. and an eligible foreign country or international organization. A FMS case is documented via a Letter of Offer and Acceptance. A FMS case cannot be closed until all related contracts have been closed. [Ref. 5]
- CASE MANAGER: Those personnel assigned by the cognizant military department that are responsible for overall FMS case management, from the initial request through the case closure. Their duties include, but are

not limited to, providing Pricing and Availability data, LOA preparation, developing financial and logistics master plan, and maintaining a complete chronological history of the case. In essence, case managers are the focal point between the FMS customer and the DoD acquisition, logistics and training system. [Ref. 5]

- ADMINISTRATIVE CONTRACTING OFFICER (ACO): Usually assigned to the Defense Contract Management Agency (DCMA), they are independent from both the customer and contractor and perform certain contract administrative functions. Among those administrative contracting responsibilities is contract closeout. They provide key contract closeout functions that allow case managers to close an FMS case. [Ref. 11]
- FMS PROGRAM: A term used in reference to all the FMS cases for a particular country that are managed by a Department of Defense organization. [Ref. 5]
- LETTER OF REQUEST (LOR): A term used to describe a formal request by a Foreign Country or international organization to purchase material or services from the U.S. Government. [Ref. 7]
- LETTER OF OFFER AND ACCEPTANCE (LOA): A formal document by which the U.S. Government offers to sell specified defense articles and services in response to a LOR. It will list the items or services being offered, estimated costs, source of supply, estimated lead times and terms/conditions of the pending sale. [Ref. 7]
- SUPPLY DISCREPANCY REPORT (SDR): Formal request for adjustment submitted by the FMS customer to either the Implementing Agency or Defense Financial Accounting System when a discrepancy exists with billing, services or material. [Ref. 5]
- NAVY INTERNATIONAL PROGRAMS OFFICE (NAVY IPO): Organization under the Secretary of the Navy that provides overall guidance and direction for the U.S. Navy. Specifically, Navy IPO negotiates and approves all U.S. Navy agreements with FMS customers. Additionally, they arrange and manage the training of FMS customers in the United States and overseas. [Ref. 12]
- NAVAL INVENTORY CONTROL POINT, INTERNATIONAL PROGRAMS DIRECTORATE (NAVICP-OF): Navy organization that formed as a merger of FMS components of the Naval Supply Systems Command (NAVSUP), the Navy International Logistics Control Office (NAVILCO), and the Naval Inventory Control Point (NAVICP). Some functions include: develop policies and procedures that support the NAVSUP Security Assistance Program, prepare LOAs for all cases that require NAVICP-OF to assume case manager responsibilities, serve as point of entry for all FMS requisitions supported by the supply system,

and serves as the FMS customer's primary point of contact for FMS related matters. [Ref. 13]

- DEFENSE FINANCE AND ACCOUNTING SERVICE-DENVER (DFAS-DE/I): This organization was established to standardize all FMS accounting and billing functions. Functions include:
 - Performing financial monitoring operations
 - Providing financial status
 - Providing financial accounting throughout the life of the FMS case
 - Executing billing and collection procedures [Ref. 5]
- DEFENSE CONTRACT AUDIT AGENCY (DCAA): A DOD organization that provides extensive audit and financial advisory services. It plays a particularly significant role in contract closeout procedures because it reviews all financial data to ensure costs claimed by the contractor are both allowable and allocable. Also, it is responsible for auditing final overhead rates for indirect costs. The closeout process is often delayed due to untimely DCAA audit results. [Ref. 14]
- DEFENSE CONTRACT MANAGEMENT AGENCY (DCMA): The agency that is assigned post-award contract administrative duties. It oversees contractor progress, inspect items, accept items, administer progress payments, negotiate contractor indirect costs, administer contract modifications and negotiate final settlement proposals. [Ref. 15]

C. THE FMS CASE CLOSURE PROCESS

Closing an FMS case is not the sole responsibility of any one organization. It requires action by not only the customer, but also the Implementing Agency, case manager, accounting agency, and contracting officer. Each depends on the other for information and reports that will help them facilitate their part of the closeout process. It is important to realize that a case is made up of individual contracts, each of which has to be complete before case closure can be initiated. Likewise a contract could include several different cases.

At the macro level, a case is considered a candidate for closure when all ordered items have been physically delivered, all ordered services have been performed and all

other conditions of the LOA are fulfilled. (DOD financial regulation volume 15 chapter 2) At this point, the IA determines if there are any open items or unresolved SDRs and takes appropriate action, certifies the final delivered cost and submits a case closure statement to DFAS-DE/I. Simultaneously, the Contracting Officer reviews any contracts that have not yet been financially completed and determines if open contracts require significant financial adjustments. In conjunction with the case manager, the Contracting Officer will ensure a multitude of actions are taken, including obtaining a complete listing of historical billing transactions from DFAS-DE/I to ensure the IA's accounts agree with the history listing. They also submit the final DD Form 2061 and 2060. The accounting agency ensures all financial transactions have been completed, executes necessary case reconciliation procedures and issues the customer a final statement of account (DD 645). [Ref. 5] If the customer is in disagrees, they can formally request adjustment via the SDR. Although policy requires FMS cases to be closed by DFAS-DE/I within two years of being deemed supply complete, they are often left open beyond the prescribed timeframes, in part due to lengthy and problematic case reconciliation.

At the micro level, one focus involves ensuring individual contracts within the case are closed correctly and in a timely manor to facilitate overall case closure. Administrative Contracting Officers assigned to the Defense Contract Management Agency, formally known as The Defense Contract Management Command, are relied upon to perform this particular service. The DCMA was created in 1990 by a DoD initiative to consolidate and streamline Contract Administrative Services. DCMA's mission is to provide effective and efficient CAS to DoD organizations as delineated in

FAR 42.302. Of the 70 functions listed, “accomplish administrative closeout procedures” is specifically mentioned.

When dealing with FMS, the CAS functions assigned to ACO’s at the DCMA are funded from the FMS trust fund. The trust fund is set up with sub accounts for surcharges, one of them being the CAS account. When an FMS case is initiated, up to 1.5% of the case’s total cost is set aside for associated administration services. Of the 1.5%, .5% is used for contract audit, .5% for quality assurance and inspection, and .5% for “other” contract services. The DCMA is one of four organizations that utilize those CAS funds to perform contract services on FMS cases. Funds are provided on a reimbursable basis; each year the DCMA submits its budget to DFAS validating their requirements. DCMA represents the largest claim of the funds, receiving approximately \$105 million for fiscal year 2001 to perform contract administrative functions. [Ref. 16] Contract closeout is one of the many functions considered a contract administrative service provided by ACOs at the DCMA. Often case managers rely on the ACO for information pertaining to contract closeout that will facilitate their case closure responsibilities. FAR Part 4.804-5 states that the office administering the contract is responsible for initiating administrative closeout procedures.

The contract closeout function can be diagrammed in Figure 4. The focus of the process is the 15 steps delineated in the FAR Part 4.804-5 that make up the “commence specialized closeout activities” block of the flowchart.

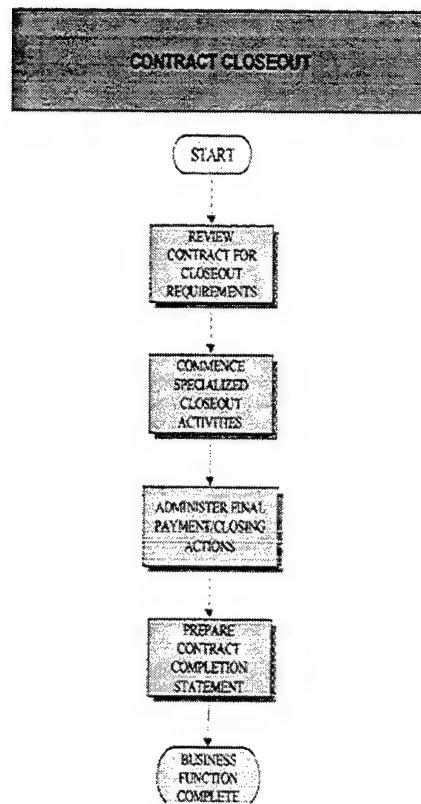


Figure 4. Contract Flowchart-One Book.

With evidence of the contract being physically complete or terminated, the ACO can begin to ensure steps delineated in the FAR are completed [Ref. 11]:

- Disposition of classified material is complete
- Final patent report and royalty report are cleared
- There are no outstanding value engineering change proposals
- Plant clearance report and property clearance report are received
- All interim or disallowed costs are settled
- Price revision is completed
- Subcontracts are settled by the prime contractor
- Prior year indirect cost rates are settled
- Termination docket is completed
- Contract Audit is completed
- Contractor's closing statement is completed

- Contractor's final invoice has been submitted
- Contract funds review is completed and deobligation of any excess funds is recommended

Once the above steps are performed, the ACO ensures a contract completion statement is prepared and procedures are followed for storing and disposing of files. It is important to note that these steps may vary in applicability according to contract type and contract clauses. For example, a fixed-price contract does not necessitate overhead rates or a contract audit whereas a cost type contract does. Similarly, if there is no Government property on the contract, there is no need for a property clearance action. The above steps are independent therefore, sequential order is unimportant. However, they are exclusive in that each step must be completed before the contract can be administratively closed. [Ref. 17]

D. PRESCRIBED TIMEFRAMES FOR CONTRACT CLOSEOUT

The FAR also establishes time limits for contract closeout. The timer begins once the contract is deemed physically complete and is based on contract type.

Type of Contract	Time Limit
Small Purchases	When Contracting Officer receives evidence of final payment and receipt of final property
Firm-Fixed-Price (except small purchases)	6 Months
Contracts Requiring Settlement of Indirect Cost Rates	36 Months
All Other Contracts Not Mentioned	20 Months

Table 2. FAR PART 4.804-1.

E. DAVENPORT AND KOPER'S MODEL

Using the methodology described in Chapter II, the contract closeout process is modeled. To illustrate this graphically, KOPeR techniques are applied to develop a detailed process flow model. The model allows tasks within each step to be identified along with the outcome of each task required to achieve the desired result.

Once the process flow model is represented, the next step in the KOPeR's methodology is to measure the process configuration to examine the results and the insights they provide to redesign alternatives. The process measures help detect pathologies, which is a milestone to characterizing a process and managing change. The following table summarizes some of the KOPeR measures and their corresponding pathologies. Each diagnostic measure is calculated from the process model.

Parallelism	Extent to which a process structure is laid-out in terms of sequential workflow.
IT Support	Degree to which IT is available to aid the process.
Process Handoffs	Measure of extent of friction created when work is handed-off from one functional organization to another.
Process Feedback	Measure of how many cycles are in the graph, indicating extent of rework produced.
IT Communication	Extent to which IT communications such as email and shared databases are available to support the process.

Table 3. KOPeR Measures and Pathologies [Ref. 13].

Based on the measurements outcomes and associated pathologies, KOPeR introduces a means to classify problems and shortcomings. Based on those common process pathologies, there are sample instances to uncover what causes the pathology. For example, if parallelism measures the extent to which a process structure is sequential,

then the process pathology of “problematic process structure” is identified; the associated sample instance is problematic “sequential process flow.” [Ref. 17].

1. The Contract Closeout Process

As stated above, the contract closeout process has 15 major steps; each of which contains specific tasks. It is not uncommon for the ACO to combine the royalty/patent report actions and the plant/property report actions, which explains why only 13 vice 15 steps are represented graphically. For a common frame of reference, oval nodes represent atomic tasks that require no subordinate sub-process tasks, while square nodes represent decomposable workflows that include lower-level subprocesses. [Ref. 9] Beneath each node, attributes are listed which specify the following process elements: 1) activity task, 2) assigned agent, 3) agent affiliation 4) process input/output, and 5) technology employed/communication flow.

All the graphs represented by Figures 5 through 38 were developed by the researcher. The first graph represents the top-level (i.e., level-1) flow of the process. The ACO's actions cannot commence until there is physical evidence the contract is complete. The graph shows that the 13 closeout steps are concurrent vice sequential; they are not contingent on the performance or completion of one another. It is also important to note that the contract completion statement, which is the ACOs final task, cannot be initiated until all 13 steps have been completed.

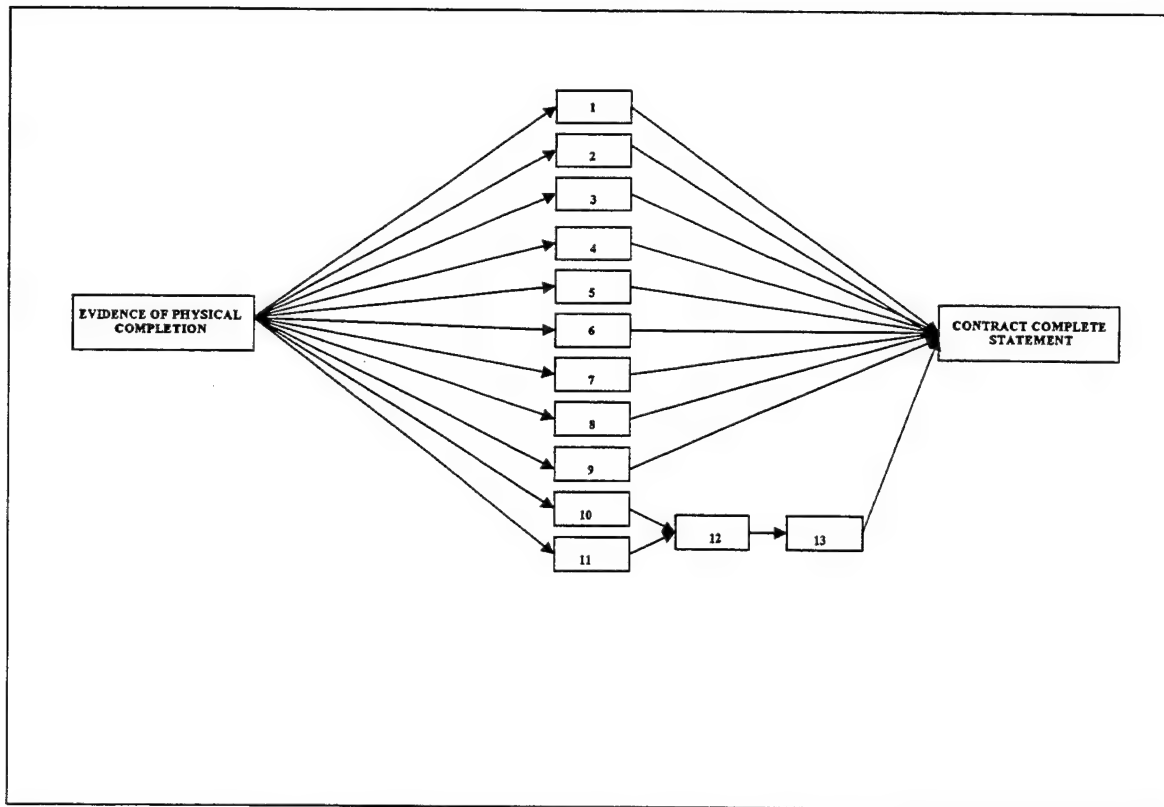


Figure 5. Level-1 Contract Closeout Process.

At the outset of the contract closeout process, research seeks evidence of physical completion. Typically, this involves receipt of a DD250 Material Inspection and Receiving Report. After shipping or accepting of all contract line items, the contractor annotates the final DD 250 with a "Z." In turn, the DCMA, utilizing a system called Mechanization of Contract Administration Services (MOCAS), inputs the "Z" signifying the contract is physically complete. The ACO periodically queries the system to find the current status of contracts. In MOCAS, the contract moves to a suspense account, indicating that a specialist within the organization has entered a production complete remark in the system. The contract moves from Section 1 (active) to Section 2 (physically complete). This begins ACO's clock for completing contract closeout. [Ref.

17] Timeframes are presented in the previous section. The pages that follow diagram and described, the level-2 subprocess flows associated with 13 Level-I flow activities.

The first step of the closeout deals with disposition of classified material. If the contract contains classified material, the ACO completes and forwards a DD1593, Contract Administrative Completion Record, to the cognizant Industrial Security Office. Since no feedback is required once the ACO forwards the DD1593, the step is considered complete. The flow of work is depicted below in Figure 6.

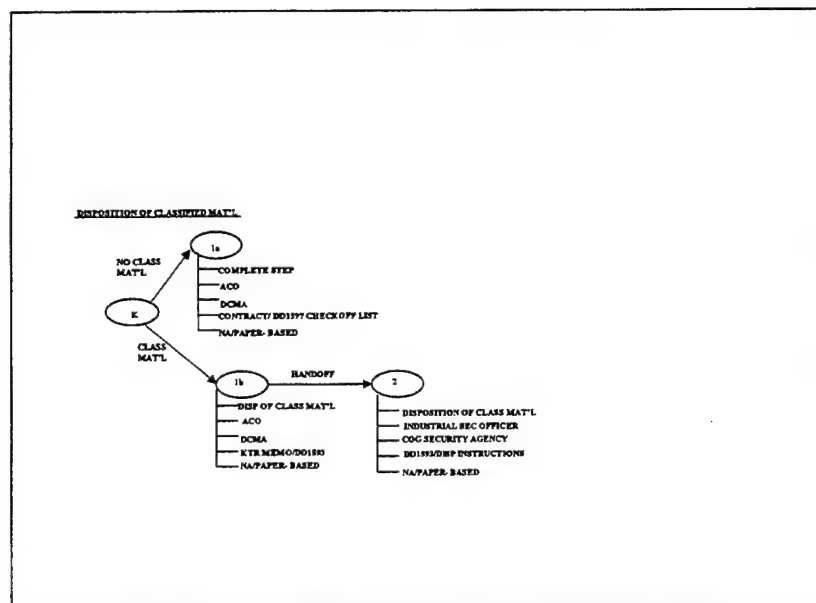


Figure 6. Disposition of Classified Material.

The very first node is labeled "K" (contract) and simply represents a branch in the process, from which work flows along one path (i.e., 1a "complete step") or another (i.e., 1b "disposition of classified material"). Due to the nature of the closeout process, most level-2 subprocess flows include such a step at the beginning. Looking at the node of the lower branch, 1b, the five node attributes can be identified: 1) activity task ("disposition of classified material"), 2) assigned agent ("ACO"), 3) agent affiliation ("DCMA"), 4)

process input/output ("contractor memo/DD Form 1593"), 5) technology employed/communication ("manual/paper exchange"). Currently, this process is completed without the support of IT. The paper-based process forces the ACO to manually complete the form and hand it off to the Industrial Security Officer. If the contract does not contain any classified material, the ACO will annotate "NA" on the checklist and consider it complete.

Step two requires the ACO to clear the final Patent and Royalty reports, as shown in Figure 7. This step is only applicable if the contract contains a clause specifying that there are patents with royalty payments. The ACO receives the final DD Form 882, Report of Inventions and Subcontracts, from the contractor. The form discloses any royalties the contractor may have received or will receive from patents or inventions during the life of the contract. Upon receiving this form, the ACO attaches a cover letter and forwards it to the Patent Council awaiting clearance. Node 3 depicts a feedback loop from the Patent Council to the ACO because clearance is required from the Patent Council before the ACO can complete this step. IT does not currently aid this process. The DD882 is prepared and delivered manually from the contractor to the ACO and manually from the ACO to the Patent Council. If royalty and patents are not applicable to the contract, the ACO annotates "NA" on the checklist and considers this step complete.

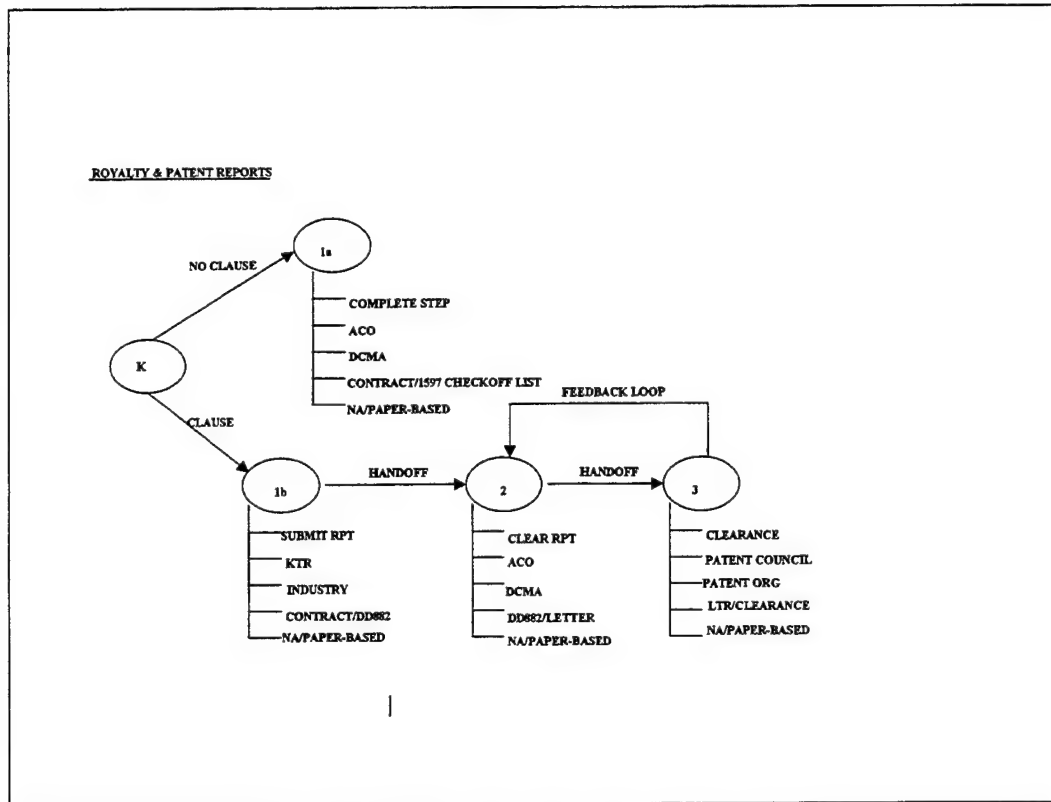


Figure 7. Royalty and Patent Reports.

Step three requires that all outstanding Value Engineering Change Proposals (VECPs) be settled. Based on the schedule of payments, DFAS codes MOCAS appropriately once the final payment has been issued. The ACO, who is also familiar with the contract's schedule of payments, verifies final payment and issues the final notice of last action. A feedback loop is depicted in Figure 8 signifying that the process of final payment review is ongoing until it is determined that final payment has been made. If the VEC clause in the contract provides that contingent VE royalty payments be paid over a period of years after physical completion of the contract. In this case, the contract is kept in a dormant status until payments are satisfied and the ACO issues the final notice of last action. If the contract contains no VECP clause, the ACO annotates this step "NA" and consider it complete.

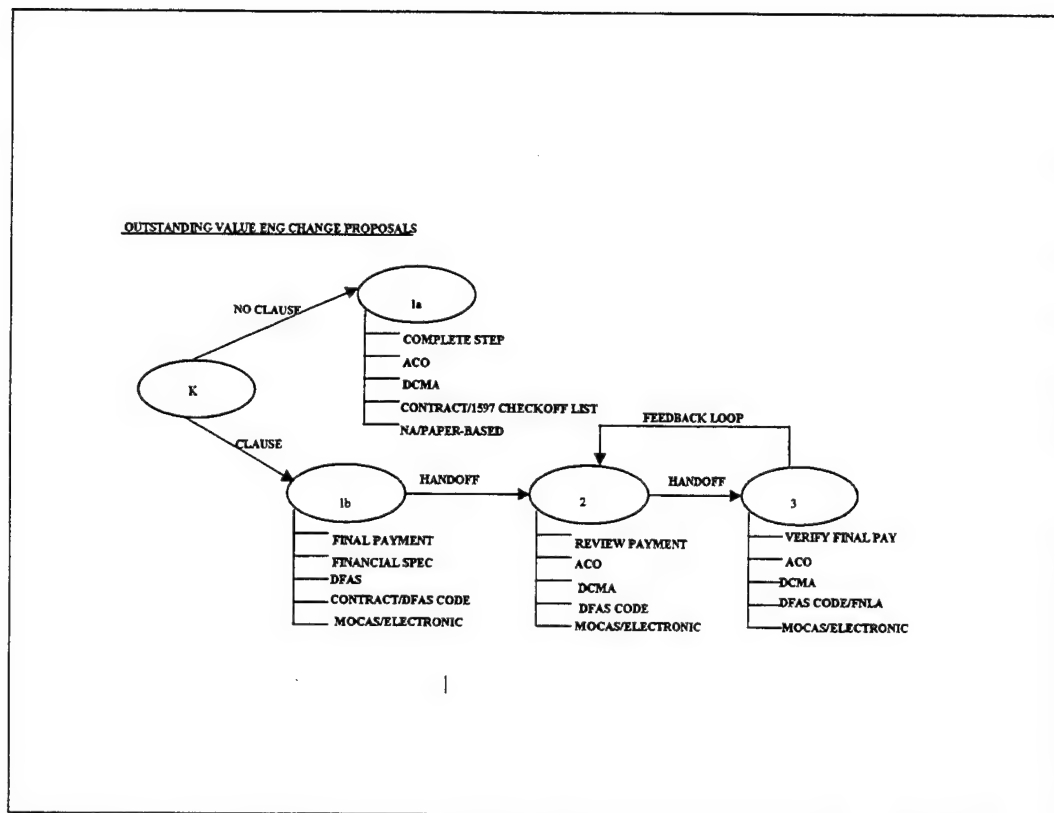


Figure 8. Outstanding Value Engineering Change Proposals.

Step four requires clearing all plant and property records. The contract will specify, via a clause, if there are requirements for clearing or disposing of property and plant to complete the contract. The tasks within the step are shown in Figure 9. The ACO will manually submit a DD Form 1593 "Contract Administration Completion Record" to the Property Administrator who in turn forwards it to the Plant Clearance Officer. The Plant Clearance Officer clears any property that needs to be disposed of and provides feedback to the Property Administrator. The Property Administrator receives the DD Form 1593 from the ACO, obtains the contractor's certification that property is cleared, along with the clearance report from the Plant Clearance Officer, and enters a code 55 in MOCAS. This signifies that both plant and property are cleared. The

DD1593 with the contractor's certification goes back to the ACO for filing. This feedback loop is depicted in node 2 of Figure 9.

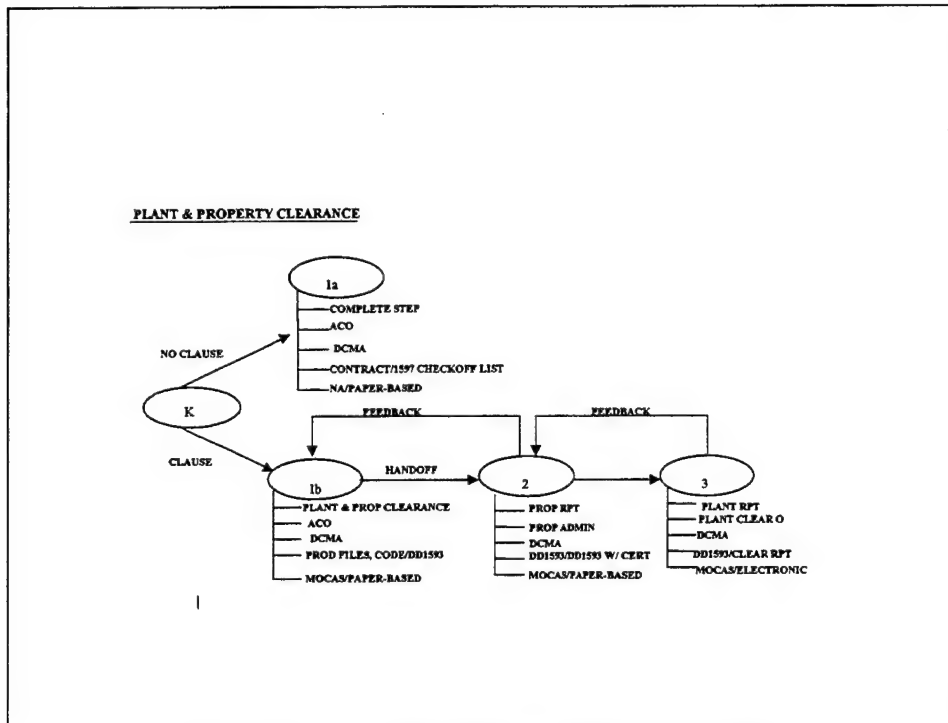


Figure 9. Final Payment Review Process.

The fifth step in the contract closeout process requires the ACO to settle all interim or disallowed costs. This step is represented in Figure 10 and is only applicable to cost type contracts. The source document for this step comes from DCAA's audit. DCAA will electronically submit a Form 1 that discloses any disallowed costs, along with a full report. The ACO then verbally negotiates the final cost with the contractor, based on recommendations provided in the DCAA report. In some organizations, the Division Administrative Contracting Officer, DACO, negotiates the settlement cost with the contractor, as depicted in Figure 10, node 2. If the contract is a fixed type contract, the ACO annotates the step as "NA" and considers it complete.

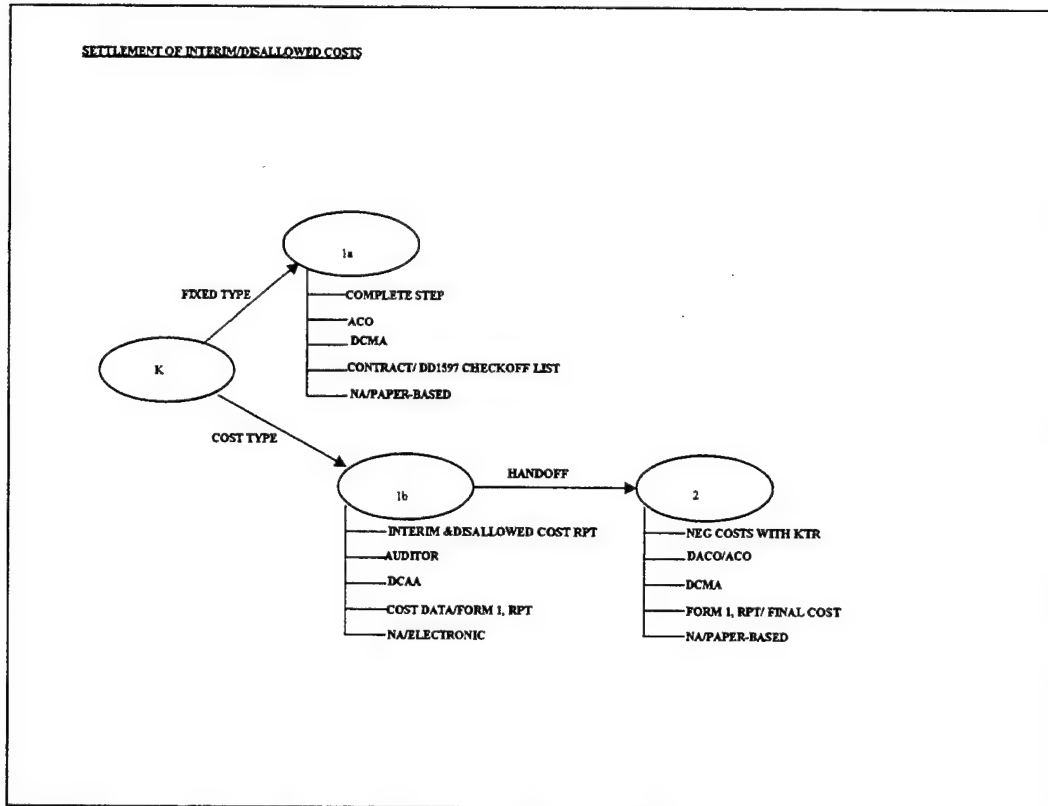


Figure 10. Settlement of Interim/Disallowed Costs.

The sixth step, per Figure 11, tasks the ACO with ensuring price revisions are complete. This will only be required on fixed-price incentive or cost-plus incentive type contracts. With these types of contracts, the contractor manually completes and submits a price revision proposal to the ACO. In turn, the ACO forwards a hard copy of the proposal to the PCO. The PCO verbally negotiates the price revision with the contractor, and manually produces and hands-off the final price revision agreement to the ACO. Upon receiving the final modification, the ACO completes this step. If there is no incentive portion of the contract to contend with, the ACO will annotate this step as "NA" and consider it complete.

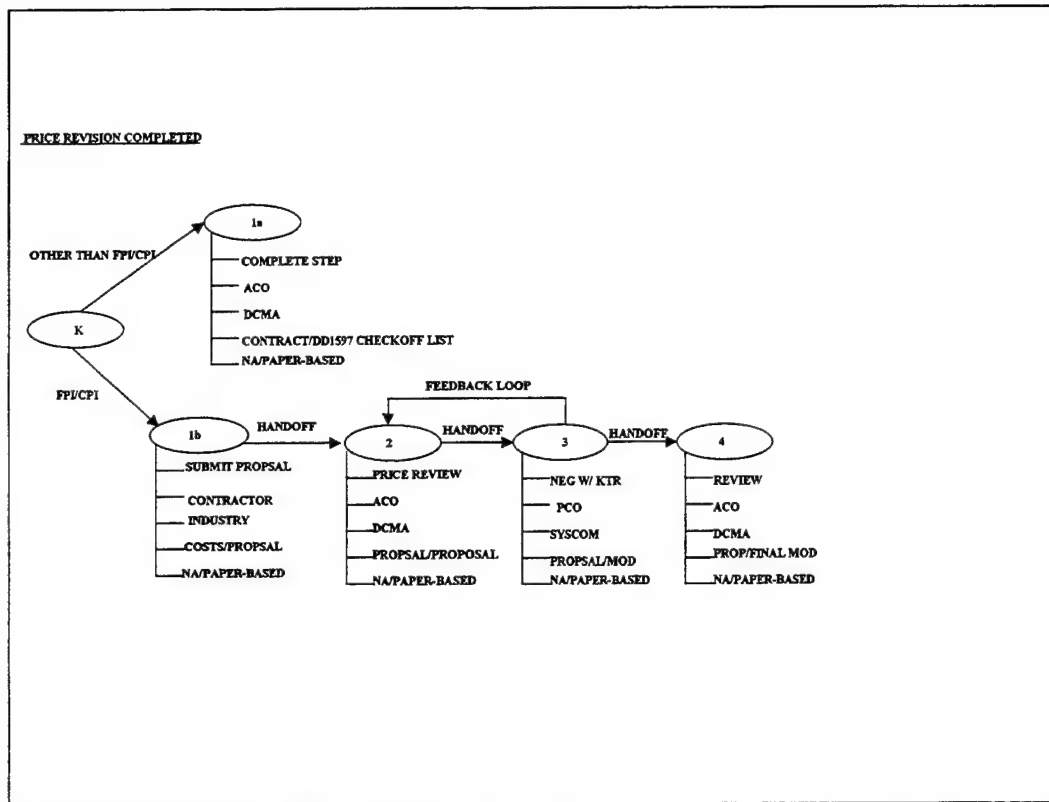


Figure 11. Price Revision Completed.

The seventh step, represented in Figure 12, requires ACOs to ensure subcontracts are settled by the prime. The final payment to the prime is withheld until all subcontractors are paid. Action is only required in cost-type contracts. The DCAA provides the input for this step, based on the final voucher manually submitted by the contractor. After reviewing the contractor's final voucher and verifying that all subcontract obligations have been fulfilled, the DCAA submits an audit report to the ACO via an email attachment. The ACO reviews the contractor's final voucher and DCAA's audit to complete this step. In fixed-price type contracts, the ACO annotates this step as "NA" and considers it complete.

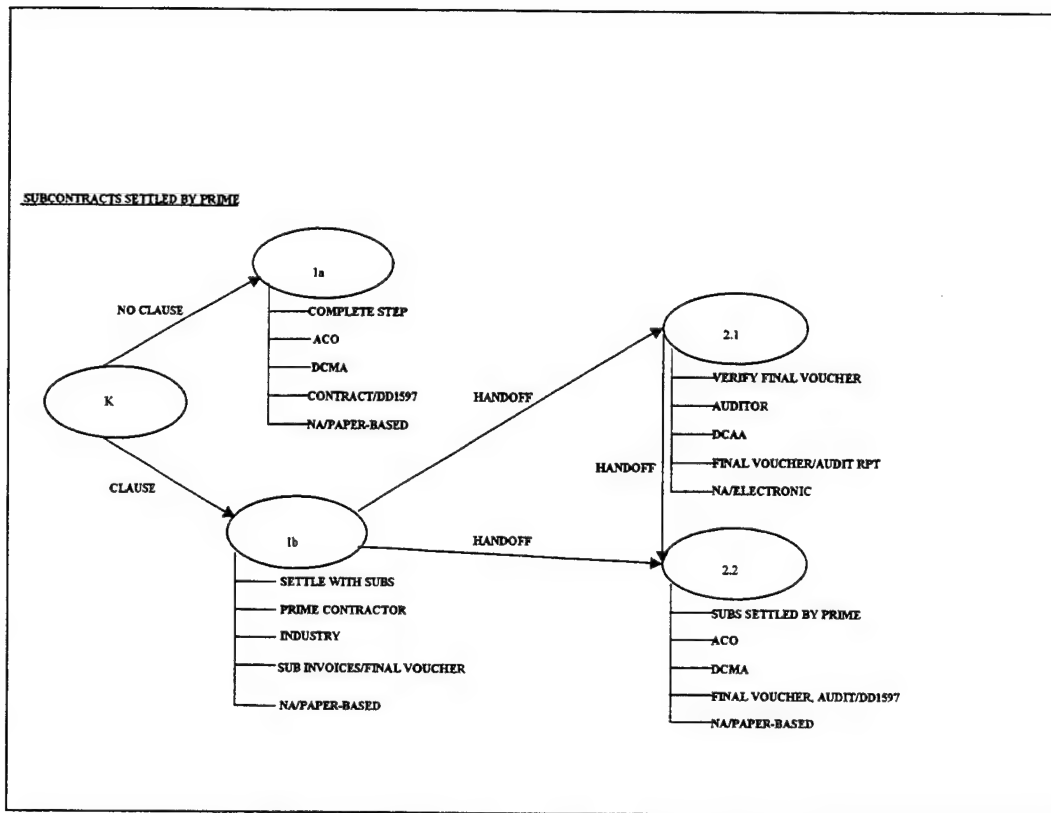


Figure 12. Subcontract Settled by Prime.

In Figure 12, notice there is no branch node (i.e., designated with the letter “K”) between node 1b and its two successors (i.e., 2.1 and 2.2). This signifies that the process flows to both successor nodes. In contrast, a “K” branch node would indicate the process flows to either successor nodes. In terms of logic, the former represents an “AND” node, whereas the latter represents an “OR” node.

In the eighth step, ACOs settle prior year indirect cost rates for cost type contracts. As depicted in Figure 13, the contractor manually prepares and delivers a rate proposal to the ACO. The ACO, or in some organizations, the DACO, settles final rate agreements with the contractor through oral negotiations. The ACO utilizes the DCAA audit, which is received via email, to guide the negotiations concerning the final rates. The rates are negotiated and settled between the contractor and the Government. Once

settled, the contractor submits a completion voucher showing the increase or decrease in the negotiated rates, as compared to the original billing rates used during the life of the contract. The final voucher is audited by DCAA and provided to the ACO, who, in turn, submits the approved voucher to the payment office. In cases involving a fixed type contract, the ACO annotates this step as "NA" and considers it complete.

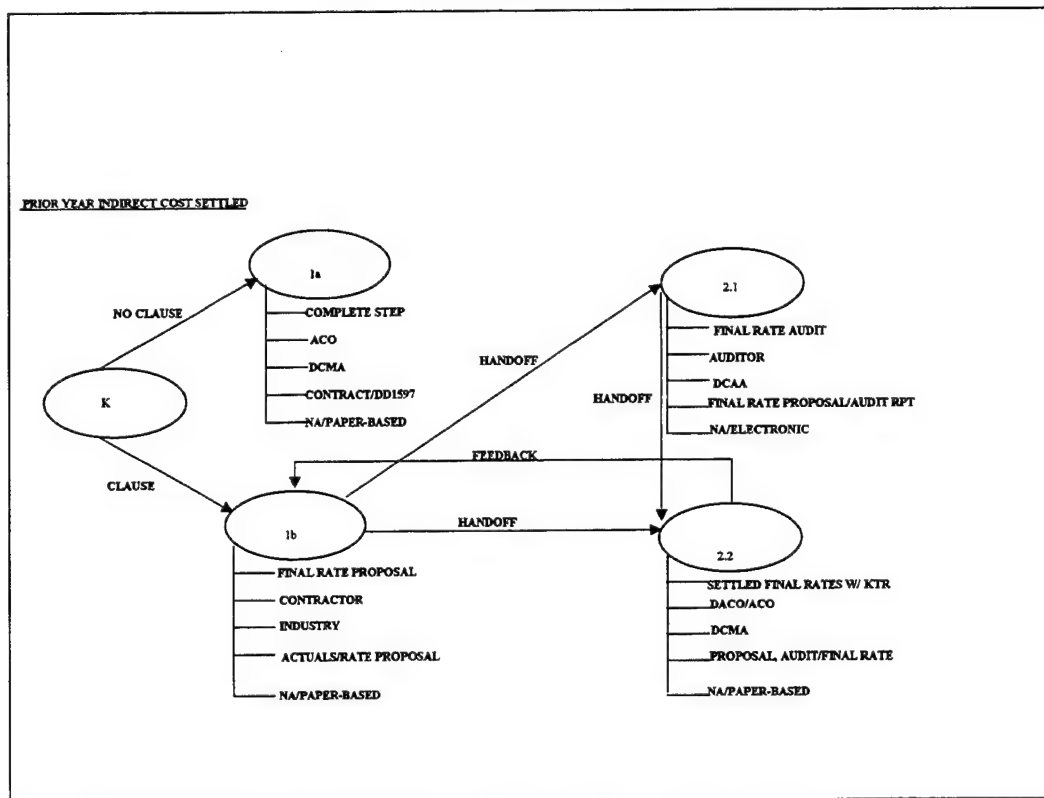


Figure 13. Prior Year Indirect Costs Settled.

The ninth step is necessary if any portion of the contract has been terminated, either for default or convenience. This step is represented by Figure 14. The PCO manually submits the initial contract modification to the ACO, who in turn manually forwards the modification to the Termination Contracting Officer (TCO) and moves the contract to section 3 (dormant status) in MOCAS. The TCO negotiates the contract modification with the contractor, and submits the final settlement contract modification

back to the ACO. The ACO processes the modification in MOCAS and distributes the final modification to close out the step. If the contract did not contain any termination, the ACO annotates this step as "NA" and considers it complete.

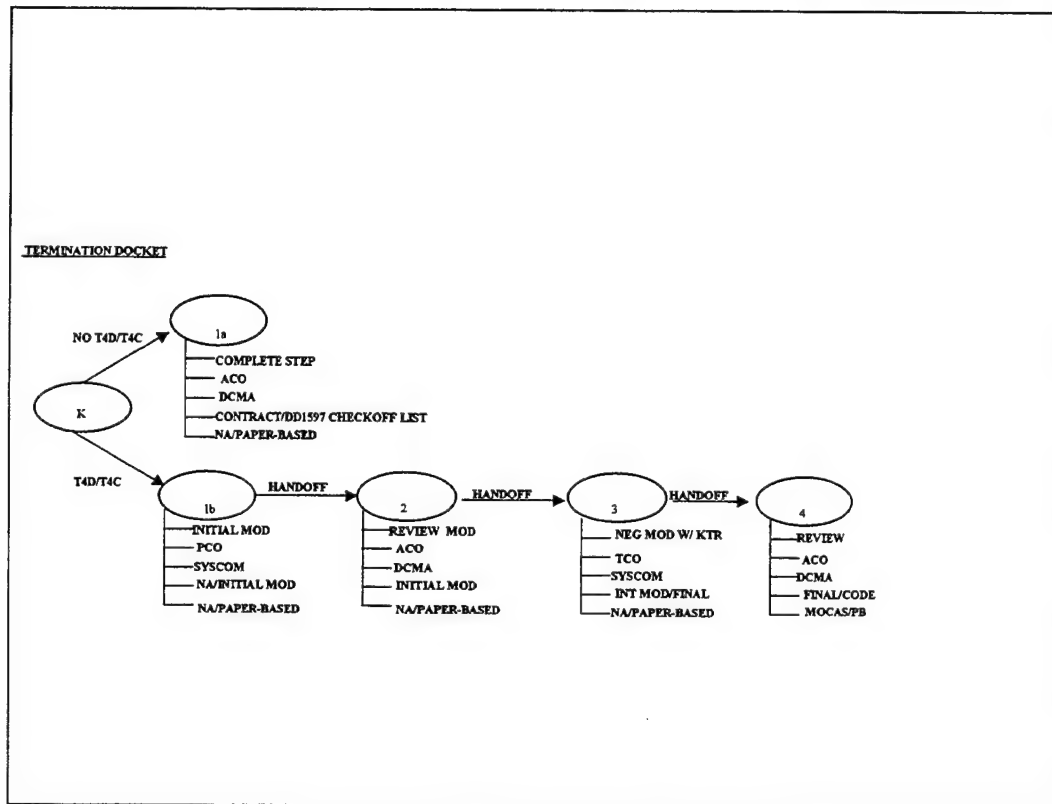


Figure 14. Termination Docket.

The tenth step in the closeout process requires completing the contract audit. As depicted in Figure 15, this step is only applicable to cost type contracts, and is contingent upon the DCAA audit. The DCAA Audit Report is forwarded electronically to the ACO. If the DCAA audit agrees with the final voucher submitted by the contractor, the ACO processes the final voucher for payment. If the DCAA does not agree with the contractor's final voucher, the ACO determines the contractor's the final payment and processes the final voucher. Fixed type contracts do not require a DCAA audit; in this situation, the ACO annotates this step as "NA" and considers it complete.

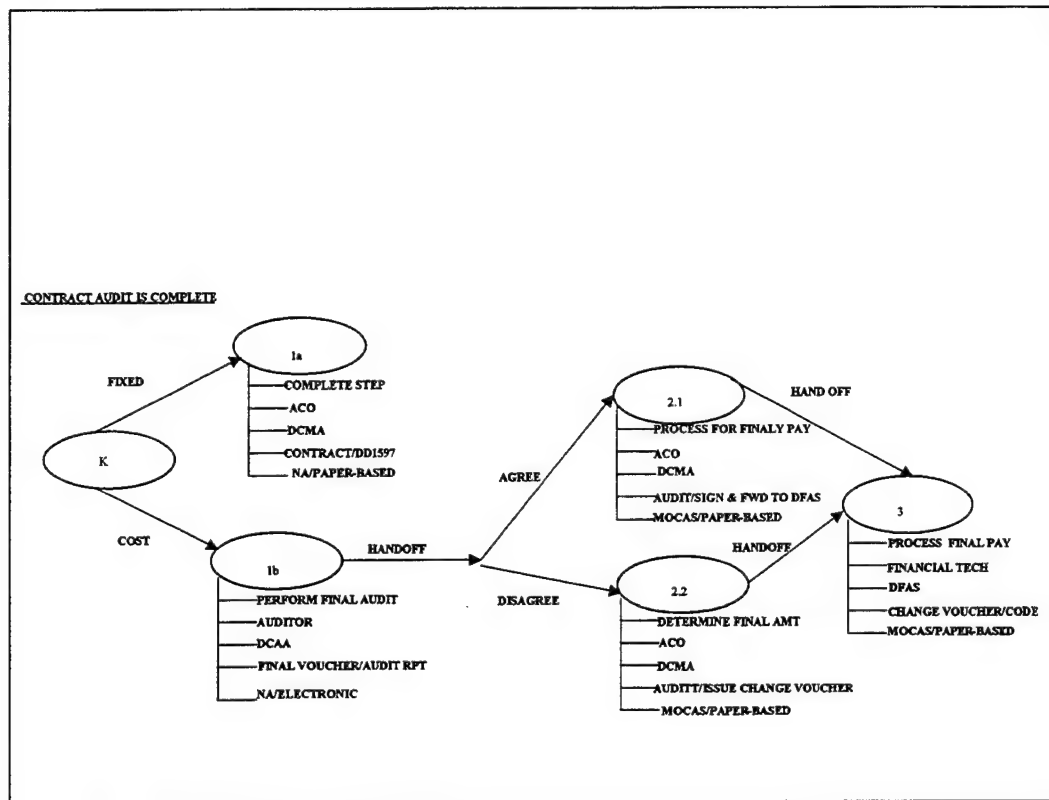


Figure 15. Contract Audit is Complete.

The eleventh step requires the contractor to complete a closing statement. As per Figure 16, the contractor manually prepares and submits the original closing statement to the ACO. The step is considered satisfied when the ACO forwards a copy of this statement to the DCAA and files the original.

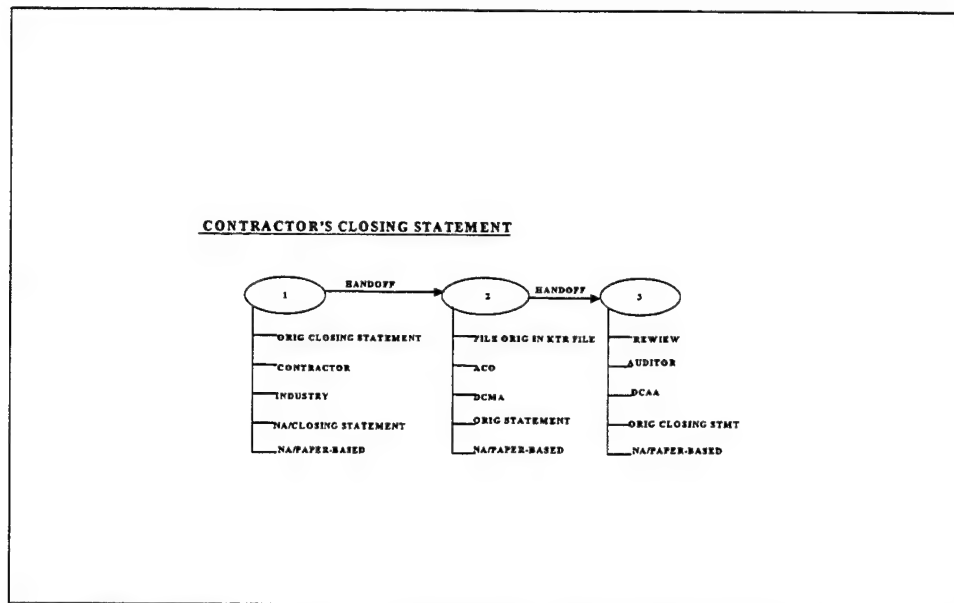


Figure 16. Contractor's Closing Statement.

The twelfth step requires the contractor to submit a final invoice. The contractor submits it to the government no more than one year after the completion date. With government approval, the remaining balance on allowable cost or fee is paid. As depicted in Figure 17, this step differs slightly depending on contract type. In a fixed price contract, the contractor submits the final invoice manually to DFAS. DFAS prompts payment and codes MOCAS that final payment has been made. After seeing the final payment code, the ACO issues the Final Notice of Last Action in MOCAS and submits to the PCO a manually prepared DD 1594, Contract Completion Statement. In cost type contracts, the contractor submits the final invoice to the ACO and DCAA. DCAA audits the invoice and forwards the report to the ACO. Using the audit, the contractor's final invoice and the closing statement, the ACO acts as the approving authority. With ACO approval and verification that all contractual actions have been performed, the ACO forwards the final invoice to DFAS for payment to the contractor.

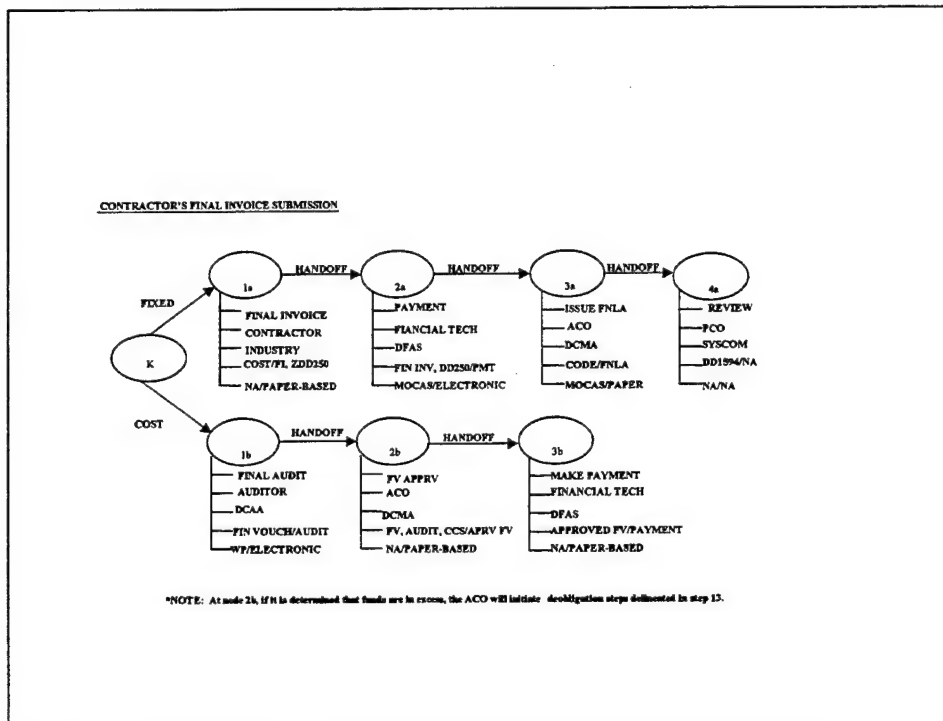


Figure 17. Contractor's Final Invoice Submission.

The ACO's final responsibility in the closeout process is completing a contract funds review and recommending the deobligation of any excess funds to the PCO. To complete this step, the ACO reviews the unliquidated obligations in the MOCAS system along with DD Form 250s. In their search for over/underruns, they also look for items that have been incorrectly entered in the system, items that have not been billed, pending contractor payments and any other matters concerning shipments or payments. If funds are in excess of contractual requirements, the PCO is notified to commence deobligation actions. A Recent change to the FAR allows the ACO to perform the deobligation action.

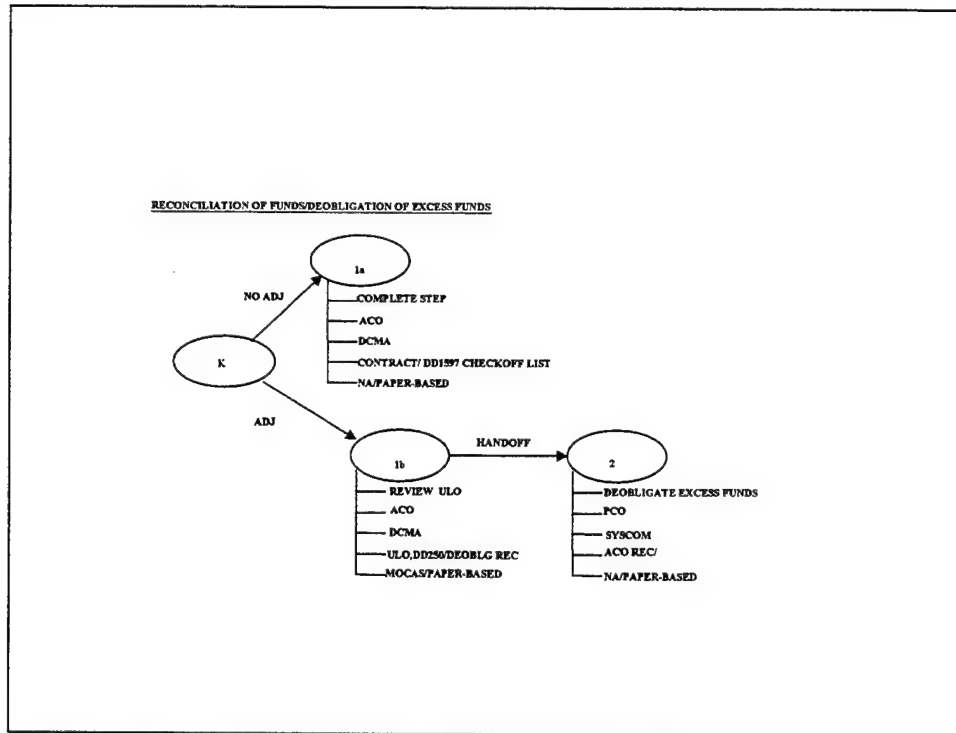


Figure 18. Reconciliation of Funds/Deobligation of Excess Funds.

2. Measurement of the Current Contract Closeout Process

Now that the process has been represented graphically, the next step is to use the KOPeR process information to attain a set of measurements. These measurements, will detect severe process pathologies and shortcomings and help suggest recommendations for redesign alternatives.

From the information provided in Table 4, the process measurements are further explained. Process size is the total number of activities (task nodes) to complete the project. The contract closeout process has a project size of 69. This represents the 15 level-1 activities delineated in Figure 5, plus all level-2 subprocess nodes in figures 6 through 18.

Measurement	Value
Process Size	69
Process Length	9
Handoffs	44
Feedback Loops	6
IT Support	14
IT Communication	10
IT Automation	0

Table 4. KOPeR Measurements of the Current Contract Closeout Process.

Process length is defined as “the number of task nodes connected together in the longest path through the process model.” [Ref. 9] In this process, the length is 9. This represents the 5 level-1 process steps delineated in Figure 5 and the 4 nodes in the longest level-2 subprocess (i.e., Figure 17). Handoffs represent the number of times work is transferred from one agent to another. There are 55 handoffs in the contract closeout process. The feedback or quality loop represents the potential path for rework in the process. In this process, the number of feedback loops is 6. The final measurement in the KOPeR model examines the amount of IT support, communication and automation in the “as is” process.

Based on the measurements above, KOPeR’s pathology diagnosis is:

- Parallelism (6.7) – parallelism looks OK for this class of process
- Handoffs Fraction (.797) - process friction
- Feedback fraction (.087) – feedback looks OK
- IT Support Fraction (.203) - inadequate IT support
- IT Communication Fraction (.130) - inadequate IT communication
- IT Automation Fraction (0.0) – inadequate IT automation

From the measurements above, the contract closeout process in its current form is a parallel process. In so, there is not much opportunity to streamline the tasks to shorten

the process length. The layout of process workflows is not considered problematic in this process and therefore will not be the primary redesign focus. Likewise, the feedback is characterized as "OK" for this process and is not considered problematic. Conversely, the process has a relatively high degree of friction, caused by the number of handoffs between agents and organizations. Additionally, the process in its current form lacks adequate IT on all three basis: support, communication and automation.

To redesign the process, KOPeR offers two recommendations. The first is to try a case manager or integrated process team (IPT) to decrease the level of friction within the process. The case manager or IPT would replace the need for specialized employees with a generalist who can perform all process tasks and thus minimize the number of handoffs in the process.

Second, KOPeR recognizes that IT support, communication and automation is inadequate at its current levels. For IT support, decision support systems and intelligent systems are advantageous tools that can greatly improve process flow and eliminate non-value added tasks. IT communication tools, such as email or shared databases can greatly expedite process flows and reduce process cycle time. Lastly, automation is nonexistent and could improve upon the existing process. Automation is more difficult to introduce into a process because it needs substantial IT infrastructure, and is therefore usually not addressed in detail.

F. SUMMARY

This chapter takes an in depth look at the contract closeout process using the KOPeR methodology. By diagramming both level-1 and level-2 process flows, it is

possible to measure the process and identify shortcomings and pathologies. The contract closeout process, in its current state, is a parallel process that is hindered by numerous specialized employees from different functional departments and inadequate IT. The process has a high degree of friction due to numerous handoffs between organizations and is characterized as a manual process with paper-based communications. Combined, the current system is plagued by fragmented process flows, unnecessary cost and increased cycle time. The following chapter looks at redesign alternatives that can incorporate the recommended changes for both IT and a case manager. Limited discussion is provided concerning an Integrated Process Team (IPT) approach.

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IV. PROCESS INNOVATION

Based on the diagnosis provided by KOPeR that identifies the shortcomings of the process, the next step is to apply the recommended transformations the base process. Specifically, two redesign alternatives are presented and discussed: 1) workflow system, and 2) case manager/job generalization.

It should be noted that DCMC Tucson and Raytheon Company have already begun to examine redesign alternatives. On November 15, 1999 the Contract Closeout Quality Management Board (QMB) was chartered to recommend different approaches for closing hundreds of contracts to the Executive Steering Committee by July 2001. A team of experts from DCMC Tucson, DCAA and Raytheon Tucson (referred to as DDART) combined their areas of expertise and used a Raytheon Six-Sigma technique to identify problems and develop innovative and efficient process solutions. [Ref. 18] Although the following redesign alternatives incorporate some of the team's recommendations, it is interesting to note that the KOPeR recommendations were developed independent of the 6Sigma process.

A. REDESIGN ALTERNATIVE PROCESS I

The first redesign is analyzed in 5 steps. First, changes to the baseline closeout process are discussed. Then comparative process measurements are provided to support further KOPeR analysis. Subsequently, strengths and positive implications of the redesign are assessed, as are its weaknesses and potential inhibitors. This section closes by addressing these inhibitors.

1. Redesign Process I Description

The first redesign alternative focuses on workflow systems. In this concept, shared databases and network communications enhance access to key information and the medium by which it is routed between agents. [Ref. 9] In a manual parallel contract closeout process, workflow systems help overcome the shortcomings resulting from a manual, paper-based system besieged by friction. In the current process, the majority of agent-to-agent exchanges are characterized by physical handoffs. Using a workflow system, documents can be transmitted electronically, speeding up the process by eliminating non-value added, paper-transfer tasks. Additionally, completing the pertinent forms "on-line" will add value to a labor-intensive process.

The following paragraphs diagram and describe Redesign Alternative Process I and how it could be modified from the current process baseline. Only the steps that have been modified from the baseline process are illustrated (shaded in gray and bolded). Figure 19 provides a top-level (i.e., level 1) view of the process, and shades the boxes for the individual steps that are affected by the redesign. Eleven of the thirteen process activities are affected by this redesign. Remember that this is a parallel process so the order in which the steps are described is unimportant, rather it is consistent with the order of figures in Chapter III.

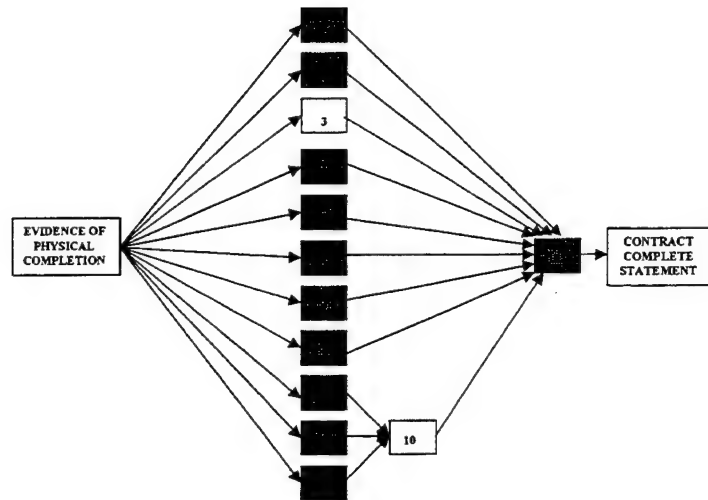


Figure 19. Modified Baseline Process.

For “Disposition of Classified Material”, two workflow system process redesigns are depicted in Figure 20.

The workflow system modifies process tasks number 1b and 2. In the current process, the ACO receives input via contractor memo to facilitate manually completing the DD Form 1593 (Contract Administration Completion Record). Once complete, the form is physically delivered to the Industrial Security Officer by either walking the form to their desk or mailing it. Instead, Redesign Alternative Process I would automate the form on a shared database. The contractor would submit inputs to the ACO “on-line”, vice manually completing and physically delivering the input memo. In turn, the ACO could access the automated form, complete it “on-line” and electronically forward it to

the cognizant industrial security office. Any disposition or retention instructions provided by the industrial security office could also be transmitted electronically.

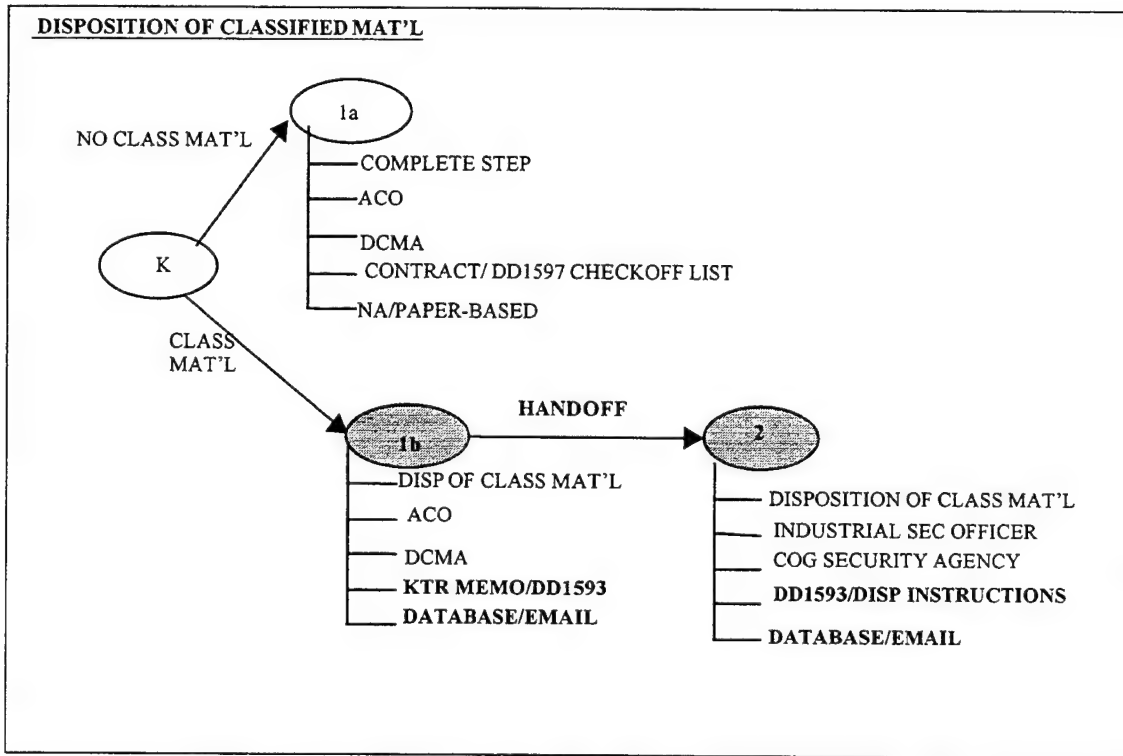


Figure 20. Redesign I: Disposition of Classified Material.

The second step contract closeout step affected by implementing workflow systems involves clearing royalty and patent reports. The workflows affected in clearing these reports for Redesign Alternative Process I are depicted in Figure 21.

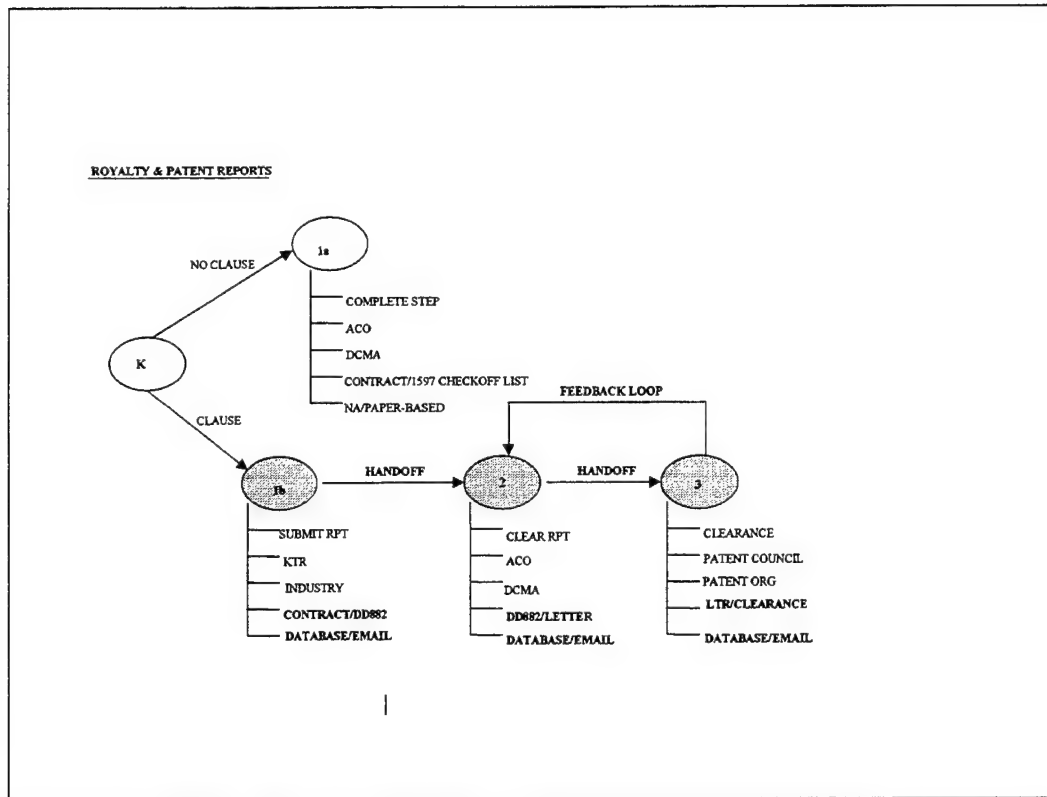


Figure 21. Redesign I: Royalty and Patent Reports.

Again, the contractor completes the automated DD Form 882 (Report of Inventions and Subcontracts) “on-line” and forwards it electronically to the ACO. Through networked communications and shared databases, the ACO electronically forwards the DD 882 to the Patent Council. Once the Patent Council clears the report, the clearance is electronically routed back to the ACO, eliminating unnecessary and laborious paper-based process steps.

The next step affected by the implementation of workflow systems occurs during plant and property clearance, as depicted in Figure 22.

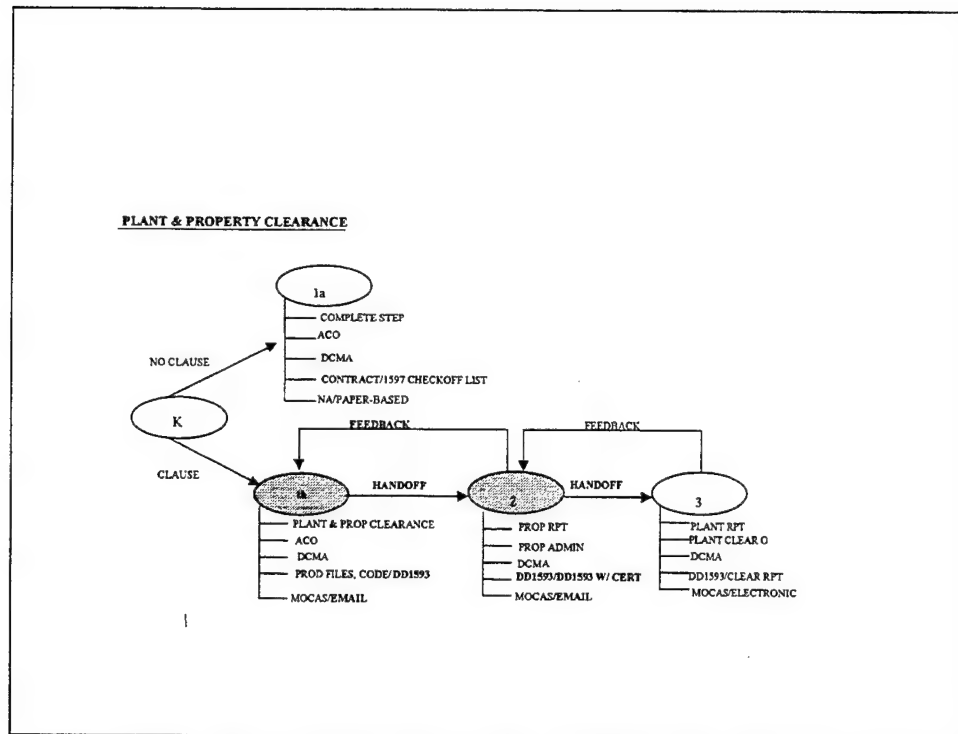


Figure 22. Redesign I: Plant and Property Clearance.

The workflow system modifies tasks 1b and 2. During these tasks, the ACO acquires the appropriate production files and verifies in MOCAS that the contract is production complete, before filling-out a DD Form 1593. The form is currently filled out manually and physically delivered to the Property Administrators desk. By automating this form on a shared database, the ACO could access the form “on-line” and forward it electronically to the Property Administrator. In turn, the Plant Clearance Officer could also access the completed form and electronically provide appropriate clearance back to the Property Administrator. This eliminates cumbersome and time consuming steps in the process. The Property Administrator, with plant clearance, could electronically send the DD 1593 back to the ACO, with contractor certification.

The fourth step concerns settling interim and disallowed costs. The Redesign Alternative Process I, as depicted in Figure 23, uses IT to enhance the process flow.

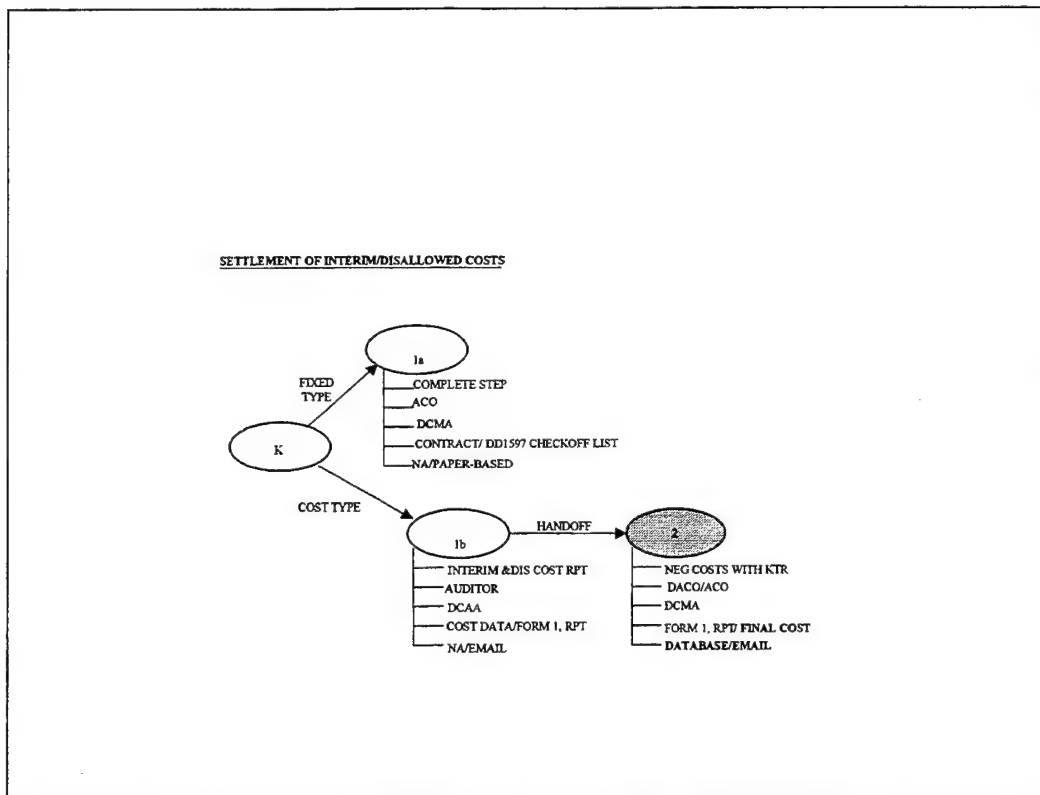


Figure 23. Redesign I: Interim/Disallowed Costs.

In the current process, the DCAA auditor sends the disallowed cost on a Form I and a full report via an email attachment. That process remains the same, however, once the ACO negotiates a settlement cost with the KTR, the final cost report would be prepared and distributed electronically using a network system, vice the traditional manual procedures used currently.

The fifth step in the current contract closeout process that benefits from a workflow system concept is the price revision task. As depicted in Figure 24, shared databases and network communications can radically enhance transferring information from one agent to another.

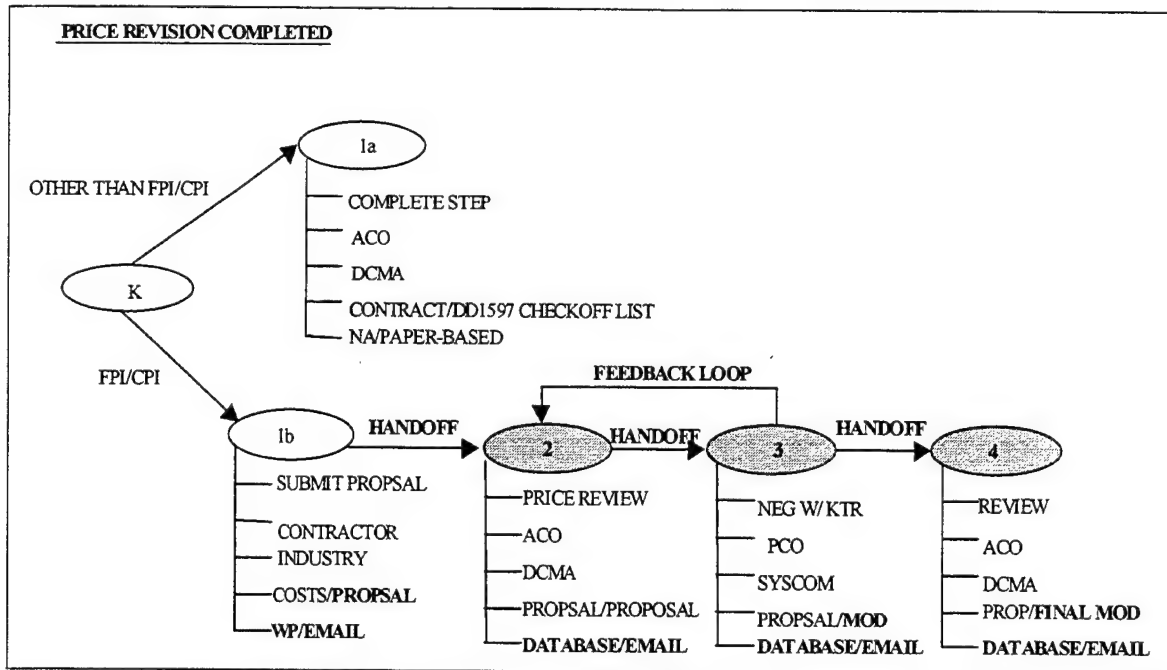


Figure 24. Redesign I: Price Revision Completed.

The workflow system slightly modifies tasks number 2 through 4. Instead of manually delivering the contractor proposal to the ACO, the contractor would use word processing capability to prepare and electronically forward their proposal. The ACO would then forward the proposal electronically to the PCO who could negotiate the final price revision modification with the contractor and email the final modification back to the ACO. For now, the PCO's job specialty is not investigated, however the PCO's job function is modified in Redesign Alternative Process II, to further enhance the process.

The next modified step involves prime contractors settling issues with their subcontractors. As depicted in Figure 25, a slight modification in routing information is suggested to decrease friction caused by process handoffs.

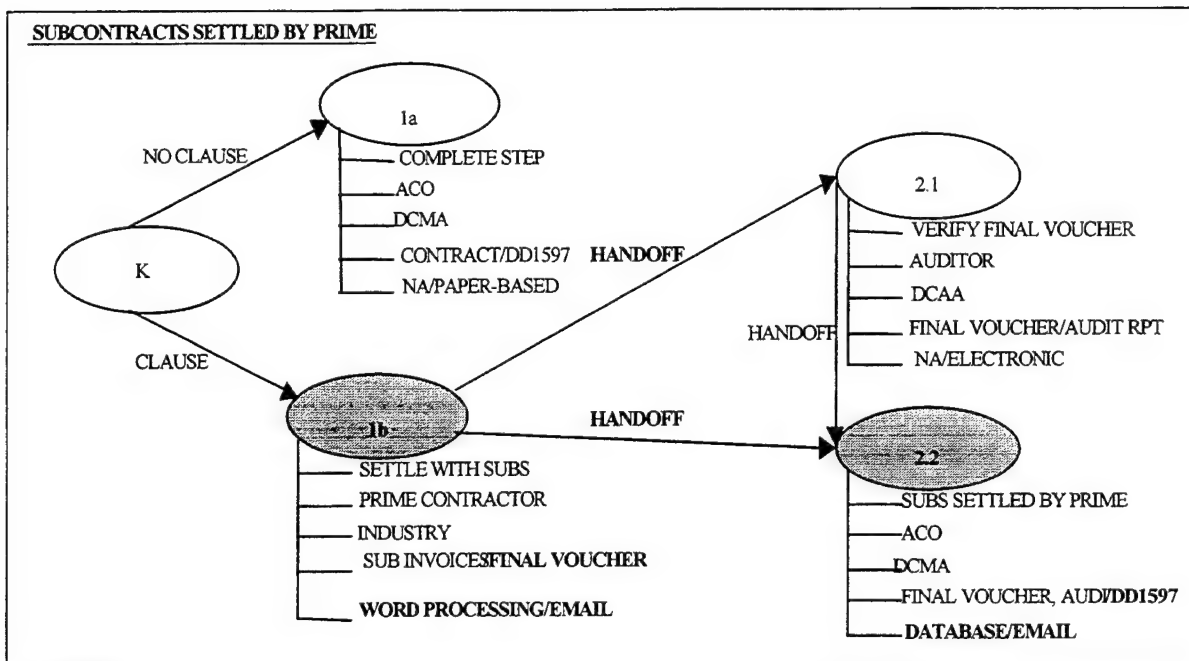


Figure 25. Redesign I: Subcontracts Settled by Prime.

Specifically, tasks number 1b and 2.2 are modified. In 1b, the prime contractor completes the final voucher in a manner that facilitates transmission via electronic means. They would submit their file to both the DCAA for audit and the ACO. Upon receiving of the audit, the ACO would verify that subcontracts have been settled. ACO could complete an automated DD Form 1597, and consider the step complete.

The next step of the contract closeout process affected by implementing a workflow system happens while settling of prior year indirect costs. The affected workflow is depicted in Figure 26.

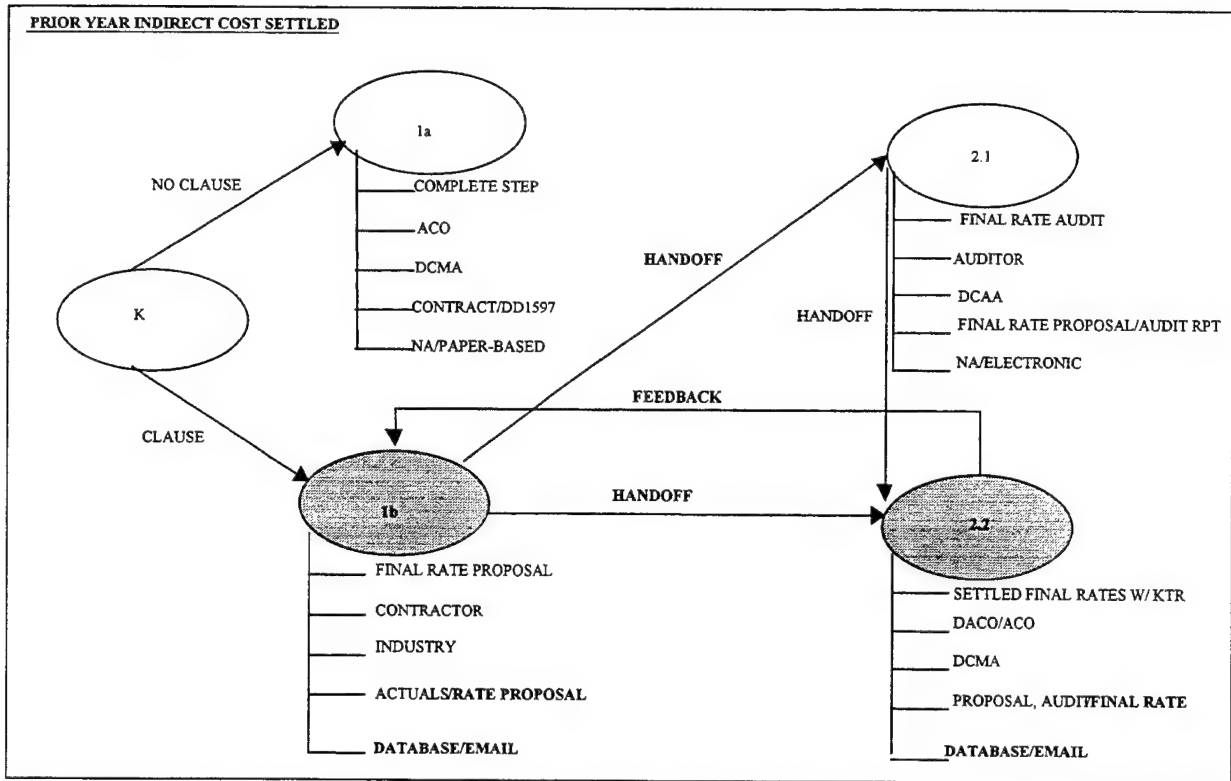


Figure 26. Redesign I: Prior Year Indirect Costs Settled.

Task 1b and 2.2 are modified in the workflow system. The contractor submits a rate proposal electronically to both the DCAA and the ACO. Using inputs from the DCAA audit report, the ACO settles any final rate disagreements and completes the final rate proposal. The final rate proposal is submitted via email back to the contractor or accessed on a shared database, eliminating the need for any paper-based system.

The next step in the process looks at workflow systems for completing the termination docket, as depicted in Figure 27.

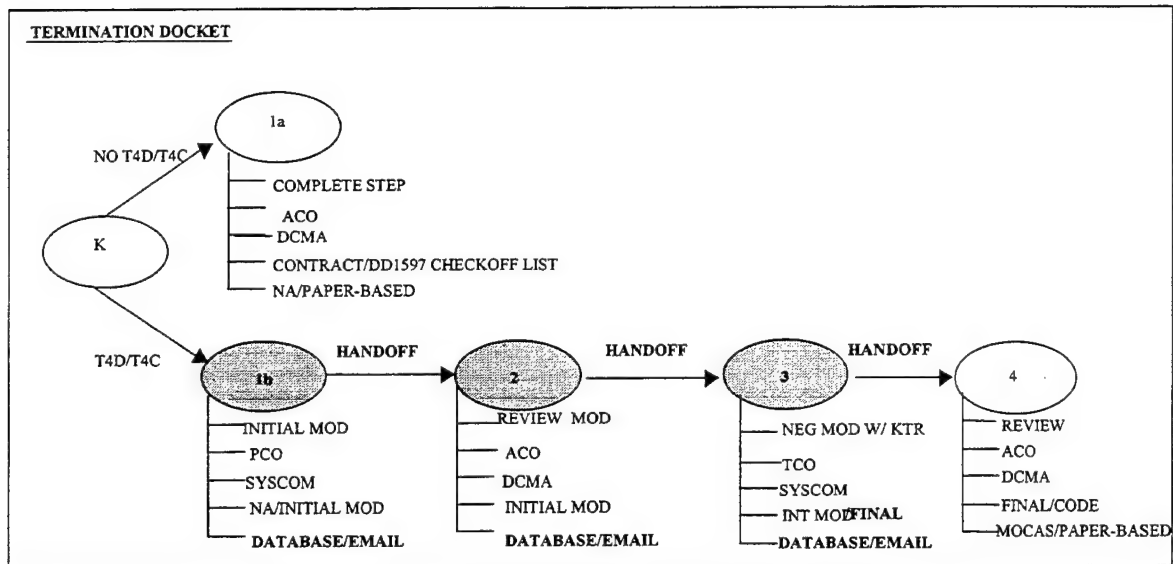


Figure 27. Redesign I: Termination Docket.

The workflow system modifies tasks number 1b, 2 and 3. During task 1b, the PCO electronically forwards the initial contract modification to the ACO. The ACO, in turn, forwards the modification to the TCO. The TCO negotiates the modification with the contractor concerning the termination for default or termination for convenience, and produces the final modification, making it available on a shared database for the ACO to access. Redesign Alternative Process II will further modify the TCO's role.

Next, a workflow system is introduced in conjunction with the contractor's closing statement. Figure 28 below provides details.

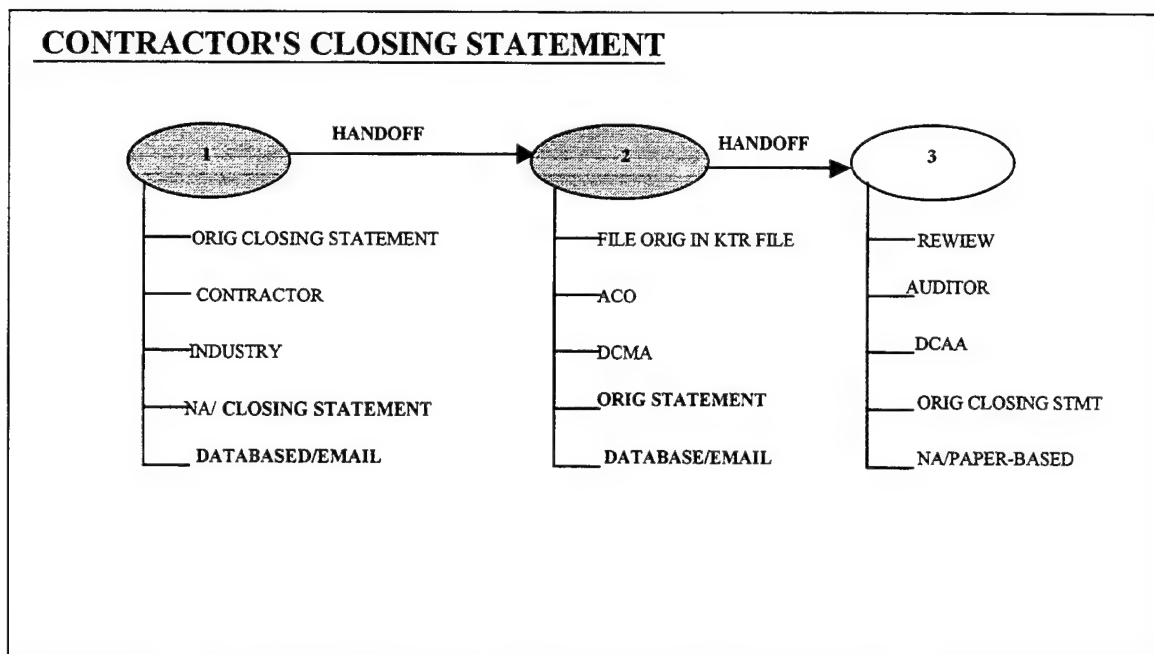


Figure 28. Redesign I: Contractor's Closing Statement.

In this step, the contractor completes and forwards the closing statement, on-line, to the ACO. Instead of physically delivering the contractor's statement to DCAA, the ACO can forward it electronically. This completes the step and eliminates burdensome paper-based routing methods.

The next step affected by implementing a workflow system occurs during the contractor's final invoice submission. The workflow affected in this step for Redesign Alternative Process I is depicted in Figure 29.

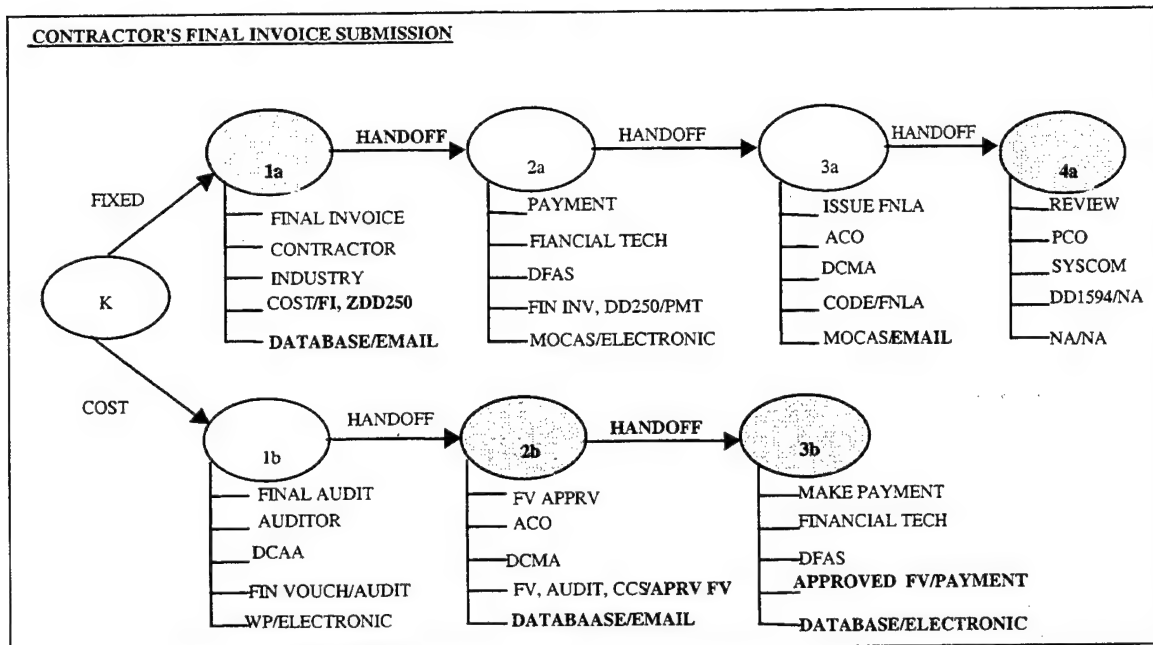


Figure 29. Redesign I: Contractor's Final Invoice Submission.

For fixed type contracts, the contractor electronically accesses and completes both an automated DD Form 250 and the final invoice, improving task 1a. Upon completion, the contractor electronically submits the files to DFAS for payment. Once MOCAS is coded for payment, the ACO can access the database for an "on-line" automated DD Form 1594, electronically forward it to the PCO and issue the Final Notice of Last Action. For cost type contracts, the ACO receives the contractor's closing statement and DCAA's audit of the final voucher. Then the ACO provides appropriate approval electronically and forwards the approved final voucher to the paying activity for subsequent payment.

Finally, the reconciliation of funds and deobligation of excess funds is also affected by implementing a workflow system. The Redesign Alternative Process I for this step is depicted below in Figure 30.

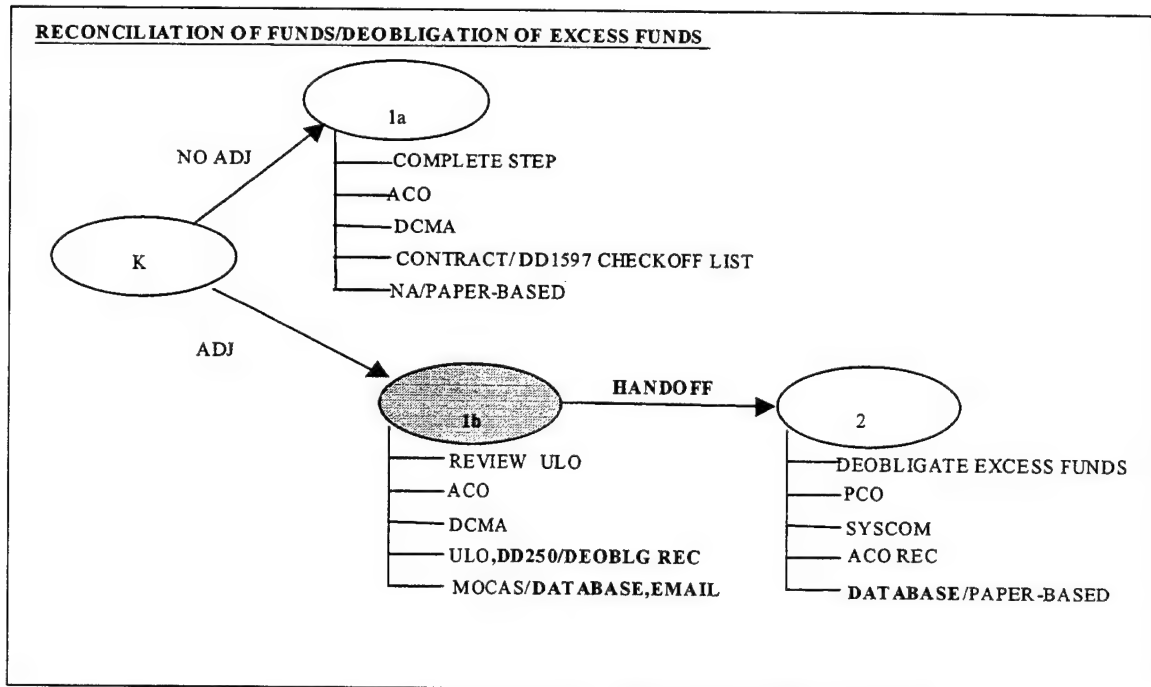


Figure 30. Redesign I: Reconciliation of Funds/Deobligation of Excess Funds.

The workflow system modifies task number 1b. Here, the ACO electronically accesses DD form 250s from a shared database. In turn, they electronically prepare and submit the deobligation recommendation to the PCO, eliminating the need for paper-based communication.

2. Comparative Redesign Process I Analysis

The first redesign alternative incorporates workflow systems and enhances them with IT solutions. To assess this redesign, KOPeR process measurements are provided in Table 5. For comparison, the values measured in the current baseline process are also provided.

Measurement	Baseline	Redesign I
Process Size	69	69
Process Length	9	9
Handoffs	44	44
Feedback Loops	6	6
IT Support	14	61
IT Communication	10	60
IT Automation	0	0

Table 5. KOPeR Measurements of Alternative Redesign Process I.

Note the dramatic change in the measured values for IT Support and Communication, highlighted in bold text. Introducing shared databases, email and automated forms, allows agents to access information and forward documents electronically vice relying on manual preparation and hand delivery. Recall, for example, the step “disposing of classified material.” In the redesign alternative, the contractor submits their inputs to the ACO “on-line,” vice manually completing and physically delivering the input memo. In turn, the ACO can access the automated form, complete it “on-line” and electronically forward it to the cognizant industrial security office. Any disposition or retention instructions from the industrial security office can be transmitted electronically or accessed via a shared database. This IT support design enables agents vital to the closeout process to access specific pieces of information without addressing issues over the phone or face-to-face.

IT support, in conjunction with e-mail, eliminates the need to hand-walk or mail any vital correspondence between agents. Referring to the disposition of classified material example from above, the contractors do not need to physically deliver their input memo; this also holds for both the ACO and the cognizant security office.

This seemingly simple solution, employing shared databases and email, shows a significant reduction in cycle time for the contract closeout process. Based on the measurements above, KOPeR's pathology diagnosis is as follows:

- Parallelism (7.67)- parallelism looks OK for this class of process
- Handoffs fraction (.638)- process friction
- Feedback fraction (.087)- feedback look OK
- IT support fraction (.884)- IT support looks OK
- IT communication fraction (.870)- IT communication looks OK
- IT automation fraction- (0.0)- inadequate IT automation

These diagnosis indicate that Redesign I solves two of the three IT pathologies (i.e., manual and paper-based process), but it does not address several other pathologies affecting the overall process baseline. Nonetheless, IT Support and IT Communication significantly improve; process performance should substantially improve through this innovation.

3. Redesign I Strengths and Positive Implications

Strengths and positive implications of redesign I center on available technology, reduced cycle time and minimal user impact.

a. Technology Available

The first strength of Redesign Alternative Process I is it can be implemented immediately. The IT infrastructure needed to provide shared databases and

email already exists. In KOPeR's explanation of redesign recommendations "email and shared databases through local/wide area networks generally have good payoffs and workflow systems can greatly expedite process flows" (KOPeR Redesign Agent output), it is clear that the contracting community already possesses such tools and technologies.

b. Reduced Cycle Time

The second strength of Redesign Alternative Process I is reducing cycle time to complete the process. By implementing this redesign alternative, agents can rely on information via shared databases and electronic forwarding. This eliminates "wait time" created through current practices, including physical delivering documents. An agent can now access the database to view or create new document "on-line", and push a button to instantaneously send them to inter-departmental agents.

Not only does it eliminate the "wait time" involved in the current process, it also minimizes the chance of misplacing a document either through the mail routing system or in an agent's inbox. Further, cycle time is reduced eliminating face-to-face coordination. Because documents can now be accessed via a database or email, questions can be resolved instantaneously. For example, if the ACO notices a mistake in an input document, they can electronically send it back to the agent responsible for filling it out, and have it changed and electronically returned. Before, the ACO was forced to track down the agent, usually via phone, physically deliver or mail the erroneous input document, and wait for its return. With shared databases and email, documents can be transmitted between agents in seconds and the chance of losing information is significantly reduced.

c. *Minimal User Impact*

The third strength of Redesign Alternative Process I is that it imposes little disruption on the user. Because DoD already uses email and shared databases, it should be relatively easy to implement these systems to enhance the contract closeout process. Most employees today are familiar with a mouse and keyboard and use them daily. The only thing that might be troublesome is the specifics of how to access the appropriate database. This can be resolved by training agents on how the contract closeout process is affected by implementing Redesign Alternative Process I.

4. Redesign Weaknesses and Potential Inhibitors

Potential weaknesses in applying Redesign Alternative Process I are conditions that counter or conflict with the potential strengths gained by process innovation. The potential weaknesses include 1) training requirements within the contract closeout process and 2) IT maintenance requirements associated.

5. Addressing the Inhibitors

Neither of the two inhibitors discussed in the Redesign Alternative Process I solution represent a major hurdle to implementation. Training is always required when a new business process is introduced. However, training personnel to use IT to communicate is not an idealistic concept that is unreachable. IT solutions are a part of daily operations in most agencies. PCs are relatively affordable and generally available for most employees. Most personnel have experience using email or accessing shared databases, so training should be minimal. The training may be as simple as showing employees how to navigate through the database and use email which can be accomplished by a simple flowchart or local operating procedure.

Maintaining the system's hardware and software is the second potential inhibitor to implementing the redesign process. This poses more of a concern. Properly maintaining the IT system is vital to its effective use and eliminating the manual/paper-based process currently being used. If computer hardware or software is not maintained properly, personnel will be forced to revert back to a manual process. Fortunately, IT maintenance should have minimal impact. DoD currently uses many systems, including NALCOMIS, SUADPS and SNAP. All of these systems require trained personnel for their upkeep and maintenance. Labeled as "Database Administrators" or some related title, these individuals are responsible for trouble shooting a system and maintaining it in good working order. They are also tasked with becoming proficient in any software updates to provide total support. Hence, the IT maintenance inhibitor to Redesign Alternative Process I is not as imposing as often perceived and could be implemented without adversely affecting other agents in the process.

B. REDESIGN ALTERNATIVE PROCESS II

As above, this second redesign is discussed in five steps. First, changes to the baseline closeout process are described. Then comparative process measurements are provided to support further KOPeR analysis. Subsequently, strengths and positive implications of the redesign are assessed, as are its weaknesses and potential inhibitors. This section concludes by discussing how to address the inhibitors.

1. Redesign Process II Description

The second alternative involves job specialization. It offers a case manager approach to certain steps, minimizing job specialization where appropriate to allow the ACO more general tasking to decrease inter-agent coordination. By collapsing many

specialized jobs into one, process friction decreases. Specifically, training the ACOs to perform these functions eliminates the PCO's negotiation tasks and the DCAA's audit tasks. In conjunction with the IT support and communication depicted in Redesign Alternative Process I, this helps streamline the process and significantly reduces cycle time and cost. Figure 31 shades in gray the top-level (i.e., level-1) the steps specially affected by Redesign Alternative Process II; subsequent level-1 graphs will follow. Notice that activities 5 and 10 are no longer required in this redesign.

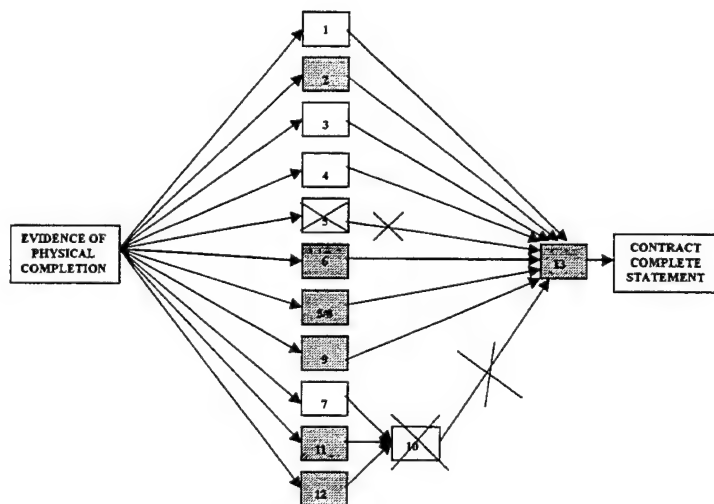


Figure 31. Change in Job Specialization.

The first step affected by the Redesign Alternative Process II is the royalty and patent reports. Referring back to figure 7 of chapter III, a contract clause will determine

if this step is applicable. However, it is not unusual for this clause to appear in a contract eventhough the contract may not contain any royalty or patent claims. Contracting Officers are prone to put this clause in the contract “just in case”, knowing that it is easier to deem a clause “NA” than to put it in post award. If the clause exists, the Patent Council is involved, even if the contractor makes no claim. Figure 32 represents a course of action if the clause exists but the contractor submits a negative report.

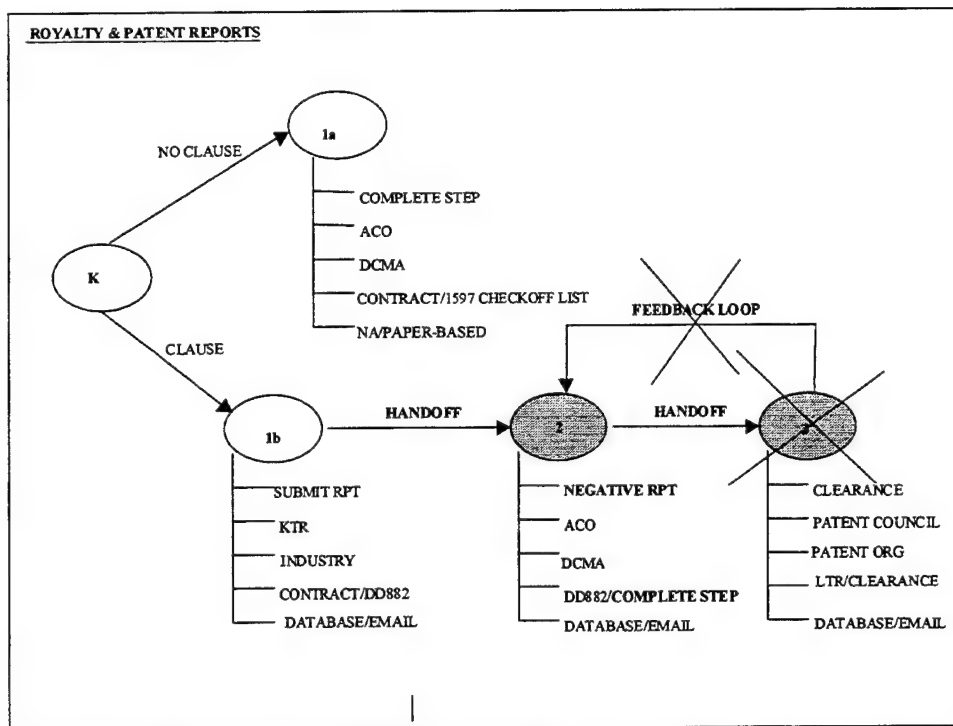


Figure 32. Redesign II: Royalty and Patent Reports.

In this revision, the contractor still completes an automated DD Form 882 on line and electronically forwards it to the ACO. If the contractor makes no claim, the ACO completes the step eliminating the need to gain clearance from the Patent Council. If a claim is made, the process described in Chapter III Figure 7 is followed. The DCMA Tucson, Raytheon Tucson and DCAA team also recommended modifications to the current Patent and Royalty clearance procedure. Concluding their charter, they drafted a

memorandum of agreement between DCMA and Raytheon that allows the ACO to clear the final patent and royalty report if it is a negative report. The ACO still forwards a letter to the appropriate Patent Council with an annotation that a negative report was submitted. The letter would further state that the report would be considered cleared and the step complete if no response is received in a 45 day period, with an additional 45 days given for a follow-up letter.

The second modified step concerns price revisions. The current process tasks the PCO to negotiate a settlement with the contractor. The ACO acts as a liaison routing the contractor's proposal to the PCO. Negotiations are not an inherently PCO function; the ACO negotiates directly with the contractor in other closeout steps. For example, the ACO negotiates interim or disallowed costs, and prior year indirect costs. The ACO's negotiating skills can be used to negotiate price revisions with the contractor, eliminating the PCO's involvement in negotiations. Figure 33 illustrates the effect of eliminating the PCO in negotiating contractor price revisions and delegating that function to the ACO.

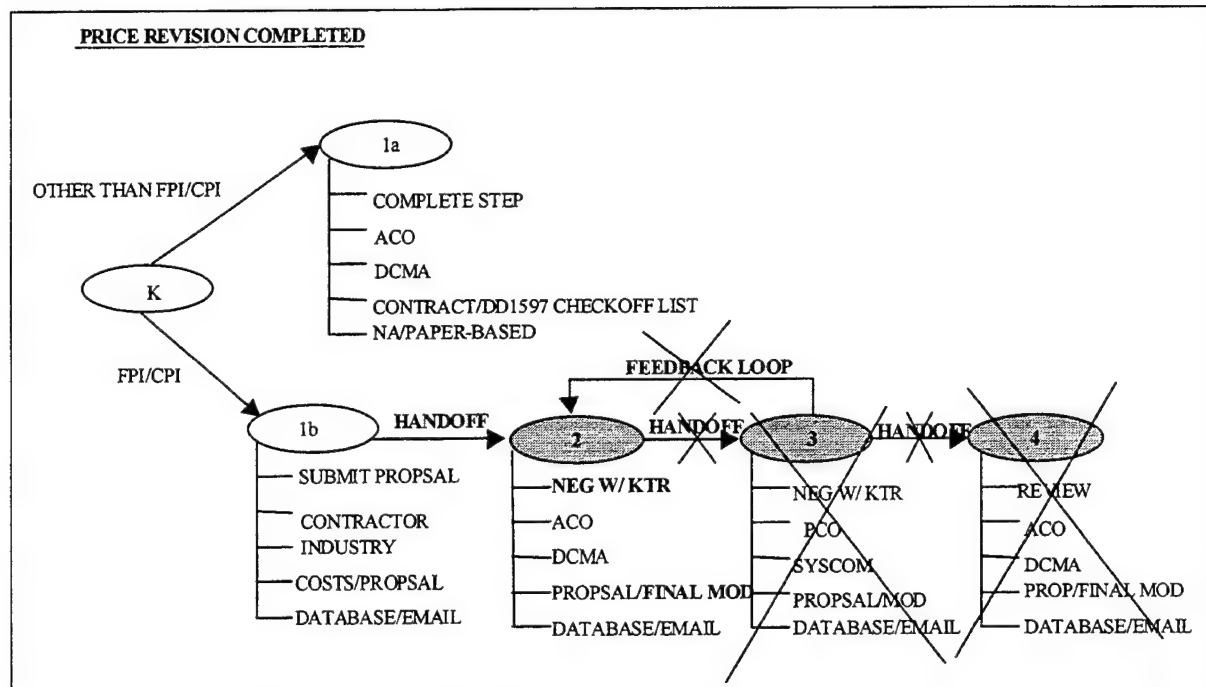


Figure 33. Redesign II: Price Revision Completed.

In Redesign Alternative Process II, the ACO negotiates all price revisions with the contractor and prepares and submits the contract modification to the PCO. By doing this, the process eliminates tasks 3 and 4 and the feedback loop from the PCO to the ACO.

In similar fashion, the ACO could to negotiate contract modifications when a termination docket exists. The current system has the ACO forwarding the initial contract modification from the PCO to the TCO. Again, the ACO is acts as a liaison for routing paper work. The TCO negotiates the final contract modification with the contractor and provides it to the ACO. The workflow affected in completing the termination under Redesign Alternative Process II is depicted below in Figure 34.

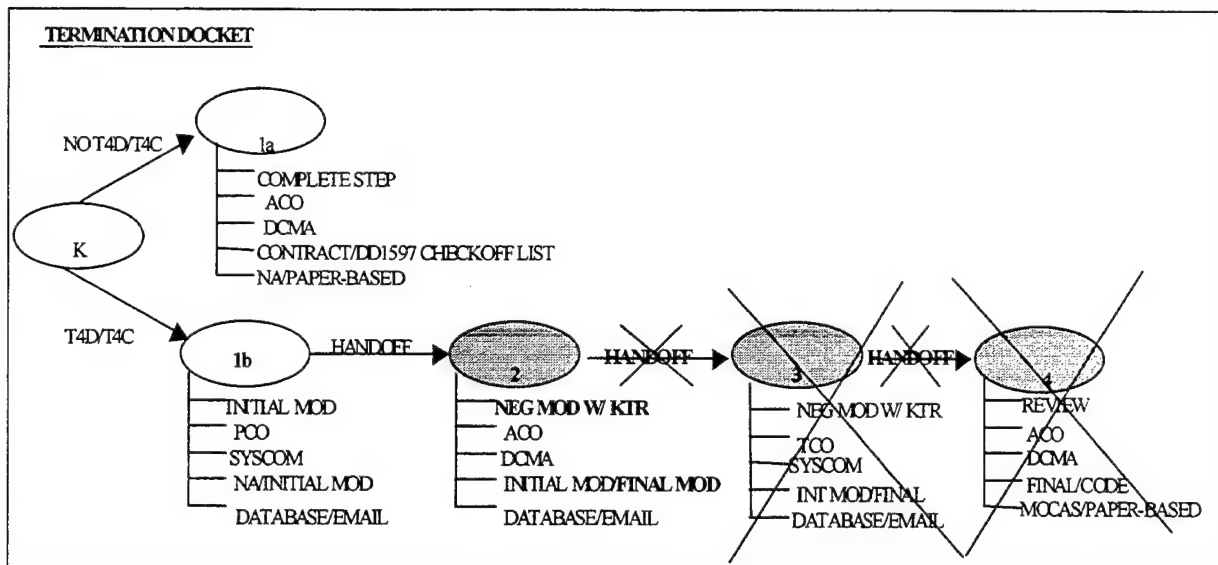


Figure 34. Redesign II: Termination Docket.

Under this design, the ACO assumes general negotiation functions and eliminates the need for another agency to negotiate contract termination with the contractor. Additional training requirements will be discussed later.

In the fourth modified step, specialized PCO tasking is delegated to the ACO, who assumes a generalist case manager role. In the current process, the ACO recommends deobligation of excess funds to the PCO, based on ACO's review of unliquidated obligations. The redesign is suggested per Figure 35.

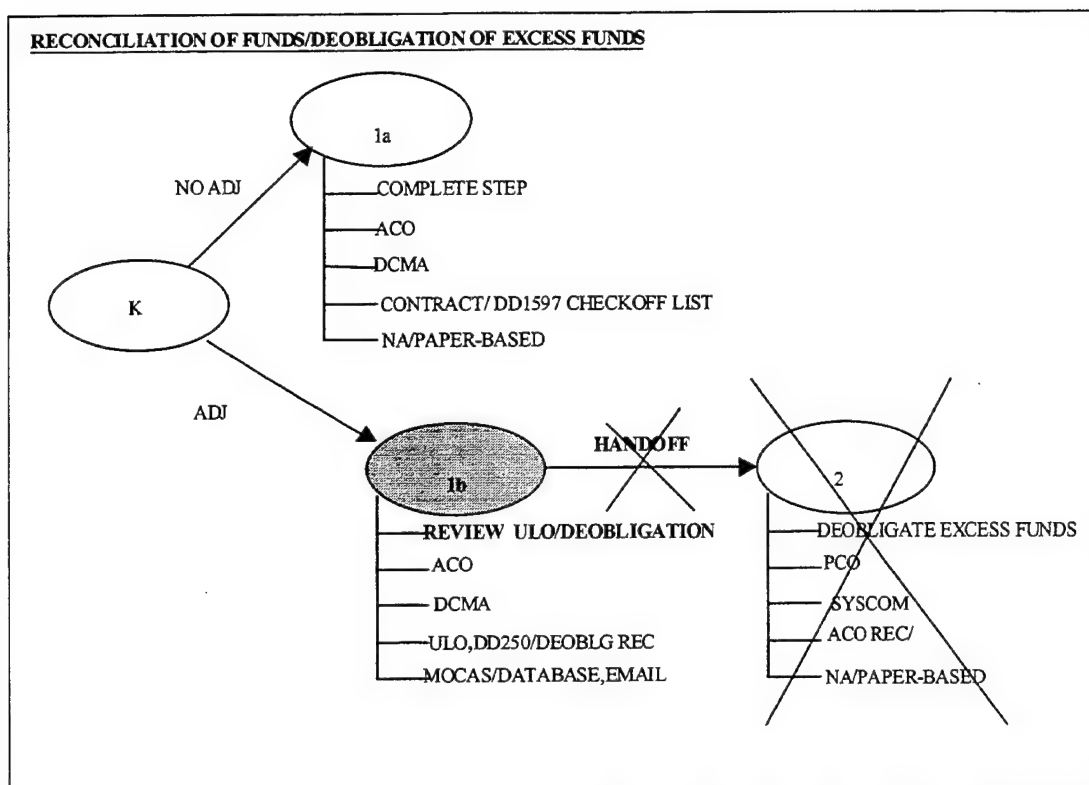


Figure 35. Redesign II: Reconciliation of Funds/Deobligation of Excess Funds.

The ACO reviews the ULO and DD250s for excess funds and initiates the deobligation tasks, vice recommending deobligation to the PCO. This recommendation is currently under review for a FAR change that would delegate the deobligation function to the ACOs. [Ref. 17]

The next three modifications under Redesign Alternative Process II involve training the ACO for job specialties performed by the DCAA auditor. Collapsing DCAA auditor responsibilities into a more generalized ACO, eliminates inter-agent handoffs in the contract closeout process. The DCAA provides the input document for five separate steps of the 13-step process, so a streamlined approach would modify or consolidate overlapping audit requirements.

In settling interim/disallowed costs, the ACO would assume DCAA's audit responsibilities. At the same time the ACO can settle final rates for prior year indirect cost. Not only does this eliminate DCAA's traditional role, but it allows the ACO, in its case manager role, to use one audit to combine two steps. The redesign is suggested below in Figure 36.

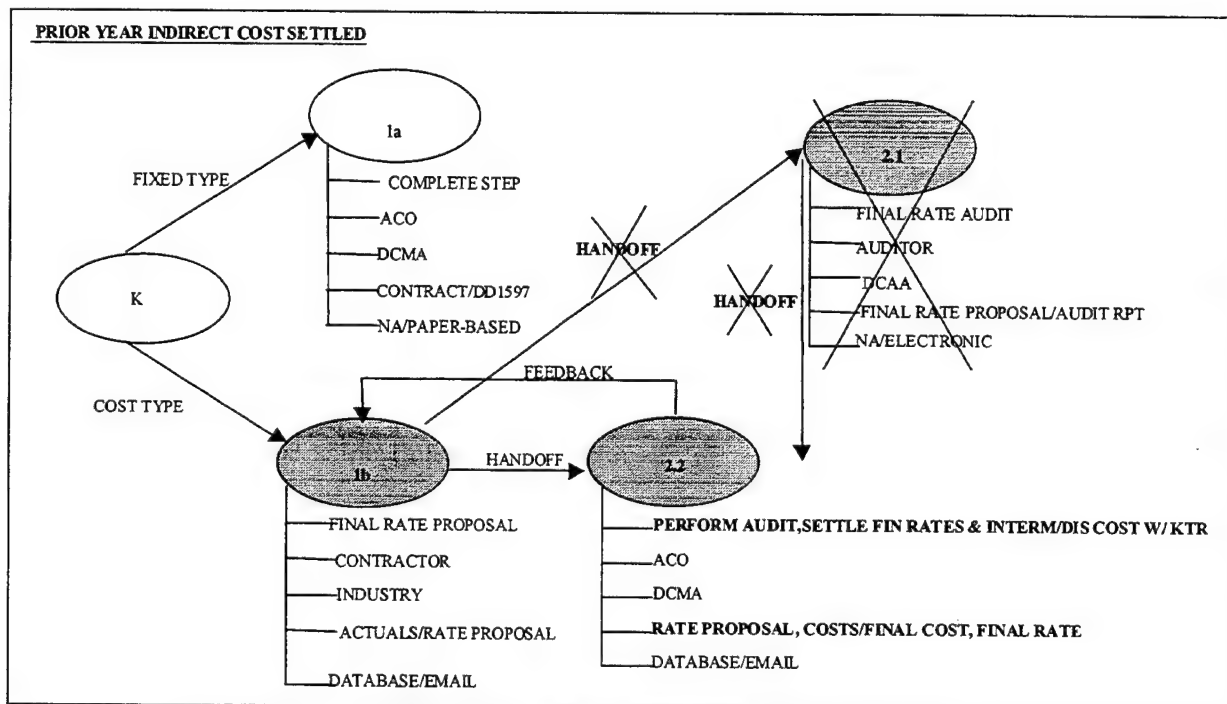


Figure 36. Redesign II: Prior Year Indirect Costs Settled.

The next modified steps ensure subcontracts are settled by the prime and the final invoice submitted by the contractor. Internal operating procedures within the contractor organization mandate that a final voucher cannot be submitted until all the subcontractors are settled. [Ref. 17] It can therefore be assumed that subcontracts are settled upon submission of the final voucher. This Redesign tasks the ACO to audit and assess the contractor's billing system, as previously performed by specialized DCAA personnel. Figure 37 is provided below.

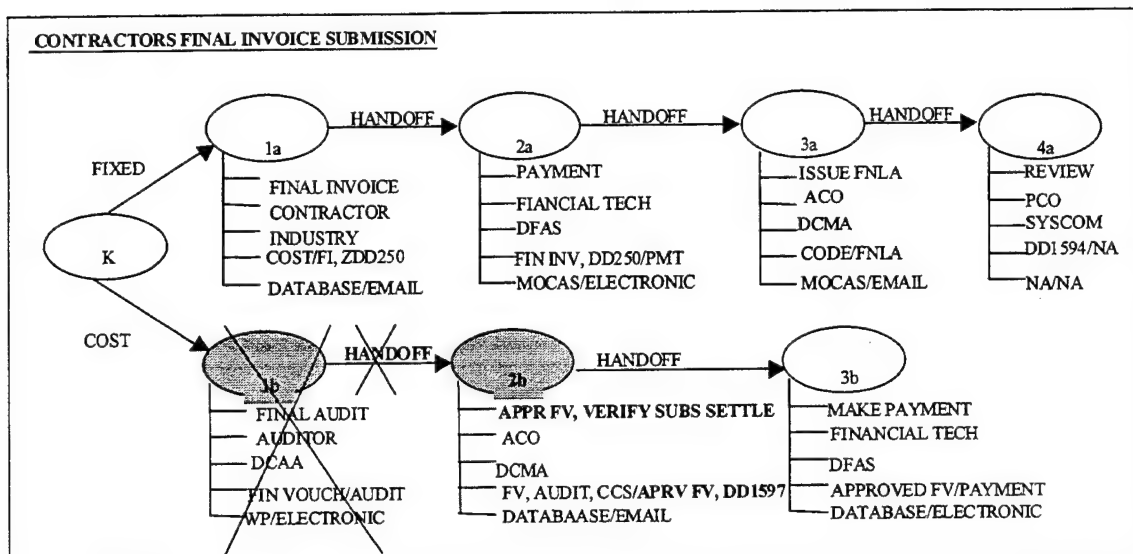


Figure 37. Redesign II: Contractor's Final Invoice Submission.

In the revised process, the ACO performs the audit required to approve the final voucher while simultaneously verifying that the prime has settled the subcontracts. The redesign combines two steps that were previously conducted separately and replaces a DCAA auditor with a general ACO case manger who has been trained in DCAA functions. This redesign also negates the need for completing the audit. In the current process, completing a contract audit was one of the thirteen steps and involved the ACO receiving a DCAA report concerning the final voucher. If the DCAA agreed with the final voucher, the ACO would process the final voucher for payment. If not, the ACO would make final determination and then submit for final payment. In the redesign, the necessity for a separate step to complete the contract audit is unnecessary. Because the ACO has audit responsibility in the redesign, they will audit and determine the final voucher to process for payment.

The last modified step is the contractor's closing statement. As depicted in Figure 38, task node 3 is collapsed under task node 2.

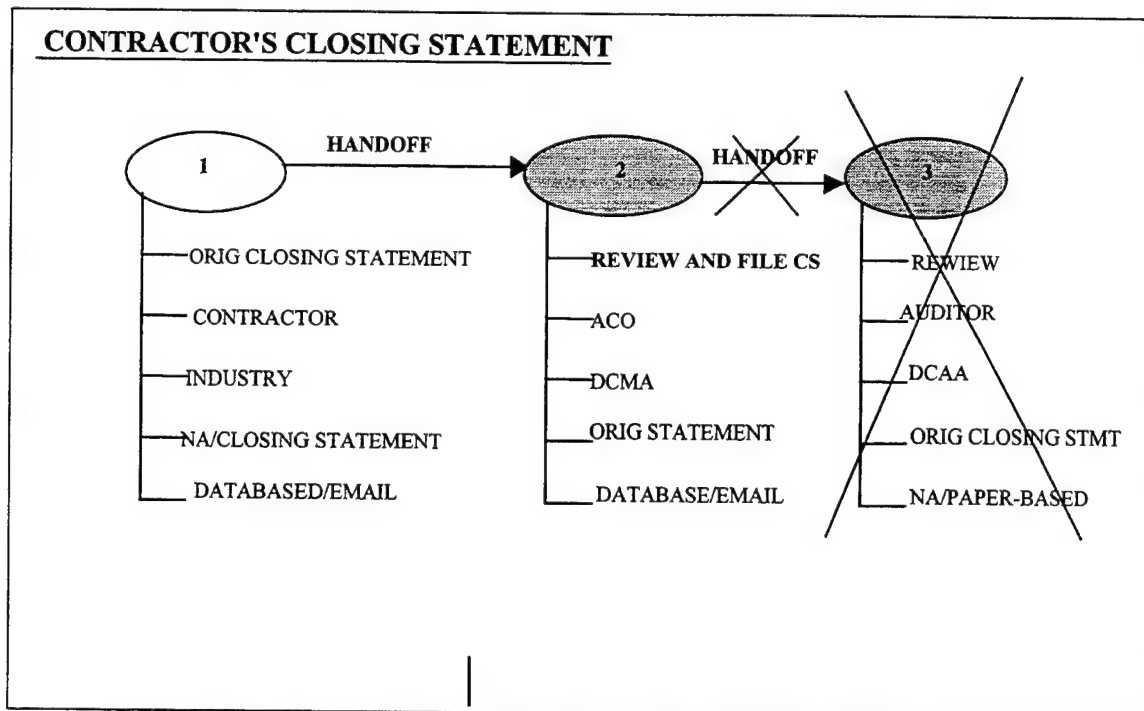


Figure 38. Redesign II: Contractor's Closing Statement.

Finally, KOPeR recommends a case or Integrated Product Team (IPT) approach to decrease process friction. A dedicated team of people with multiple areas of expertise would be assigned to conquer contract closeout issues in much in the same way the DDART was chartered to overcome closeout process inhibitors. Contractor, DCMA, DCAA and DFAS representatives could team up and periodically meet face-to-face to discuss issues that are hindering closeout. Although this concept is not illustrated graphically, it is an important concept that can facilitate the current process. Areas where the DCMC is co-located geographically with the contractor would most effectively use the IPT concept. With all interdepartmental functional areas represented, work could be routed simply and discussions could ensue face-to-face. The IPT concept, as used with the DDART charter, can prove to be productive and build teamwork between the different agents to enhance process flow and decrease friction.

2. Comparative Redesign Process II Analysis

The second redesign alternative incorporates the case manager concept, replacing specialized employees with generalists. In analyzing this alternative, the redesigned process is first measured in terms of KOPeR methodology. Table 6 lists the KOPeR measurements for the second redesign alternative. The baseline and redesign I values are also listed to help compare of the redesign alternatives to the current process.

Measurement	Baseline	Redesign I	Redesign II
Process Size	69	69	52
Process Length	9	9	8
Handoffs	44	44	29
Feedback Loop	6	6	4
IT Support	14	61	48
IT Communication	10	60	49
IT Automation	0	0	0

Table 6. KOPeR Measurement of Alternative Redesign Process II.

Notice the key changes to measured values in process size and handoffs. Differences in IT Support and Communication were addressed under redesign I. By collapsing job specialties into a general case manager, process size decreased by 17 and the number of handoffs by 15. Based on the measurements above, KOPeR's pathology diagnosis for redesign II is:

- Parallelism (6.5)- parallelism looks OK for this class of process
- Handoffs fraction (.558)- process friction
- Feedback fraction (.077)- feedback looks OK
- IT support fraction (.923)- IT support looks OK

- IT communication fraction (.942)- IT communication looks OK
- IT automation fraction (0.0)- inadequate IT automation

Although the process still suffers from friction due to the number of inter-agent handoffs, Redesign II dramatically improves the baseline model, increasing process efficiency and effectiveness.

3. Redesign II Strengths and Positive Implications

Strengths and positive implications of Redesign II center on reduced friction and greater process control.

a. Reduced Friction

Overall, process handoffs are reduced, which reduces friction. With less inter-department coordination, the ACO (case manager) should be able to accomplish requisite steps more expeditiously, which will reduce the overall contract closeout cycle time. From the table above, the number of handoffs decreased from 44 to 29 which represents a 33% reduction from the baseline process. Although KOPeR measurements still diagnose handoffs as pathology adversely affecting the overall process, Redesign Alternative Process II relieves friction significantly. Cost savings should be realized as cycle time improves and excess funds are deobligated and possibly re-applied to other contracts before fiscal year constraints deem them unusable. Total work-hours applied toward contract completion can also be reduced.

b. More Control of the Process

Adapting a generalist approach and replacing specialized employees, the ACO will gain autonomy over the process. In the baseline process, the ACO's ability to proceed in the contract closeout process was depended on interactions with numerous agents. Although interaction and coordination is still needed, the input previously

provided by PCO/TCO negotiations and DCAA audits provided by the ACO. The ACO is more empowered to perform the tasks that influence their ability to close a contract. As the FAR mandates, the ACO ensures all closeout steps are complete; Redesign Alternative Process II gives them more hands-on control to complete the subsequent steps leading to contract closeout.

4. Redesign II Weaknesses and Inhibitors

The inhibitors are threefold, 1) extensive training requirements, 2) loss of an independent audit agency and 3) resources.

a. Training

Whenever specialized employees are replaced by generalists who perform all process activities from start to finish, training will play a vital role in implementation. In both the PCO/TCO negotiation and DCAA auditor scenario, the ACO assumes additional sub-specialties. Dedicated training is necessary, either through OJT or course work, so that ACO's gain the experience and knowledge required to successfully incorporate their new job tasking.

b. Loss of Independence

In the current process, the DCAA performs an independent audit function that provides a system check and balance. Because they are an independent entity, they can perform unbiased cradle to grave audits. This independence brings a certain integrity to the process that human nature cannot sway. They neither work for the contractor nor the DCMA, so they can thoroughly audit costs associated with a contract with an unbiased eye. In the case manager concept, this independence is jeopardized as the ACO assumes the role of auditor and negotiator of final rates.

5. Addressing the Inhibitors

The first potential inhibitor of Redesign Alternative Process II is training. The redesign basically collapses selective PCO/TCO roles and all DCAA roles into the case manager (ACO). As stated before, the ACO has negotiation functions in other closeout steps that place them in direct contact with the contractor and tasks them to agree upon prior year indirect cost rates and price revisions.

The more difficult part will be gaining specialized training in assuming the TCO's role in completing any contract termination process. Specifically, a termination for default vice termination for convenience could have significant Government ramifications if it is not performed properly. The Government has the right to terminate for convenience whenever it is in the "best interest of the government." [Ref. 19] The contractor is privileged to an equitable adjustment in order to keep them "whole." A termination for default is imposed when the contractor has failed to perform its contractual obligations. A termination for default is initiated by the government, thereby placing the burden of proof on the government that their actions were legal and proper.

The effect of a termination for default on the contractor can be traumatic; the Government is not liable for any expenses the contractor incurred on undelivered work and can claim reimbursement for advance payments or progress payments tied to the undelivered work. [Ref. 19] Naturally, a contractor is adamant about rescinding and converting a termination for default to a termination for convenience. Therefore, it is important to specially train the agent conducting the termination settlement to ensure no negative legal action against the Government ensues. If this redesign is implemented, it

will increase the need to train the case manager in the particulars of terminating contracts. This includes the FAR Part 49 uniform policies and procedures on contract termination. [Ref. 19]

The second potential redesign inhibitor is losing objectivity when conducting audits. To address this issue, it is important to realize the reality of a shrinking industrial defense base and the shift in focus on contractor/government relationships. Today's acquisition professional is taught that the government/industry relationship should be "win-win." With so few purely military defense contractors, the need for a good working relationship has become a necessity. For major defense contractors, it is very likely that the government will conduct business with them on future contracts so the mentality of a win/loss strategy is antiquated. That being said, an ACO who assumes full audit responsibilities must maintain a degree of objectivity to do the right thing for both the contractor and the government. The gains in reduced cycle time and cost likely outweigh the potential loss in objectivity.

C. SUMMARY

KOPeR's diagnosis of the redesign alternatives for the contract closeout process points out the shortcomings of the process and recommends changes to improve the design. By comparing the redesign to the base line, KOPeR allows a means to analyze changes before time and money is committed to implementing change. No one design recommended offers a total solution to diagnosed pathologies. However, collectively the redesign has the potential to radically change the current process.

KOPeR's analysis of the contract closeout process suggests that the current process is concurrent but lacks adequate IT support and is hindered by process friction. To redesign the process, the model suggests employing support and communication Information Technology to expedite process flow. KOPeR also recommends a case manager or case team approach to decrease friction caused by inter-departmental coordination and handoffs.

The first redesign alternative incorporates workflow systems by introducing IT. The redesign takes a process that is highly manual/paper-based and attempts to make it less laborious by using shared databases and electronic communication. This alternative is relatively easy to implement because DOD has the required technology, including local/wide area networks, e-mail, speed and memory. The analysis also shows that the positive implications are more significant than the potential inhibitors. With the technology already available, training can achieve an IT enhanced solution without much impact to trainer or trainee to.

The second redesign alternative dilutes job specialization to generalists in applicable steps. This alternative can be implemented relatively quickly, pending additional ACO training. The new tasks assigned through this redesign are not dramatically different than the existing skills they use to accomplish their closeout responsibilities. With additional training, the case manager concept can be captured by the ACO.

In Redesign Alternative Process II, KOPeR analysis shows that the positive implications are more significant than the process inhibitors. Training is the most critical

factor, but by no means unachievable. The ongoing initiatives to foster good working relations between the government and industry will facilitate the objectivity needed to ensure everyone "wins."

Lastly, the IPT concept can immediately coordinate efforts between experts in inter-departmental agencies. This dedicated team would work together, having periodic face-to-face meetings to discuss and overcome hurdles to the closeout process. Although the FAR names the ACO as responsible for managing the 13 contract closeout steps, interaction between several different agencies is required before the ACO considers a contract closed.

Chapter V discusses a recommended course of action based on the analyses of the contract closeout process redesigns and provides further areas of recommended study.

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V. CONCLUSIONS, RECOMMENDATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

This final chapter includes key conclusions, recommendations and suggestions for future research along the lines of this investigation.

A. CONCLUSIONS

As discussed in Chapter I, this thesis examines the contract closeout process using the Davenport framework to identify shortcomings and offer innovative redesign solutions. Through an exhaustive literary search and personal interviews with contracting professionals, the current process was represented graphically using KOPeR techniques to diagnose process pathologies and shortcomings. Measurements revealed unique aspects of the current contract closeout process, which identified its limitations and recommended redesign alternatives. Two specific redesign alternatives were presented and discussed in Chapter III. The positive implications and potential inhibitors for both alternatives were presented and discussed in Chapter IV.

Specifically, the contract closeout process was found to run concurrently, eliminating any major need to focus on the sequence of steps in the process. However, the process was hindered by inadequate IT, including support, communication and automation; it also suffered from process friction due to excessive handoffs. To combat the diagnosed pathologies, two alternative redesigns are developed and compared against the baseline process, ensuring the methodology remained constant.

The first redesign incorporates workflow systems and introduces IT into the process. In particular, it provides significant improvement in IT support and communication, though it makes no moves towards automation. Because the recommended redesign can be implemented with existing technology, it is a viable redesign alternative that can be implemented now. Maximizing the use of shared databases, automated forms and email, it does not require much additional personnel training or new technology.

The second redesign alternative builds on the former, but offers a case manager approach to decreasing process friction. By replacing job specialization with a generalist, handoffs between inter-departmental agents are reduced; this reduces process friction. Analyzing this redesign shows that job functions, which were traditionally performed by separate agents, can be collapsed into one case manager. Training is the major requirement to accomplish this redesign, as case managers/ACOs would assume responsibilities once performed by PCOs, TCOs and DCAA auditors. This redesign alternative is achievable, but would tradeoff some of the objectivity of the current process for greater control and less process friction.

Both redesign models provide positive net benefits. Literary research combined with process analysis supports the idea that incorporating the recommended changes to the current process could drastically improve the overall process in terms of cost savings and cycle time reduction. Utilizing the enablers discussed in each redesign process could radically change the current process. However, because Redesign II incorporates the recommended changes from Redesign I, it is important to consider these changes together to make more than incremental improvements.

B. RECOMMENDATIONS

Based on the conclusions from this research, the following recommendations are provided.

- **The DoD should first modify the current Contract Closeout Process by implementing Redesign Alternative Process I.** Redesign I, which focuses on introducing IT support and communications, streamlines the process while eliminating non-value added steps. Because the current process is considered manual and labor-intensive, introducing shared databases and electronic communication would minimize the need for both physical handoffs of information and the wait time associated with a paper-based method for routing information between agents. Additionally, the errors and rework associated with human nature could be minimized as forms were automated and cells were designed to not accept erroneous inputs.
- **The DoD should progress toward being able to implement the additional changes presented in Redesign Alternative Process II for the Contract Closeout Process.** Redesign II recommendations require more extensive training and job specialty including revamping courses, schools, and on-the-job-training to prepare the case manager/ACO to assume new job responsibilities. Because the ACO already requires negotiation skills in their contractor interactions, assuming traditional PCO or TCO negotiation functions should be a realistic objective to achieve through training. The ACO is also familiar with the documents provided by the DCAA, so learning the audit criteria to generate those reports should also be relatively easy. By collapsing certain job specialties into one case manager/ACO, the process minimizes its friction caused by inter-departmental handoffs and shortens the overall process size by combining task nodes. This alternative redesign process, although not a complete solution in itself, can be used in conjunction with redesign I to innovate the process.

C. AREAS OF POTENTIAL FUTURE RESEARCH

During this study, the researcher found several areas warranting further research.

Each area is presented below and given a brief synopsis.

- **How can the plant and property clearance portion of the contract closeout process be further streamlined using a process innovation approach?** The plant and property clearance step is one that many ACOs consider time consuming and burdensome. Procedures exist for property that is lost, damaged or destroyed, but the procedures have caused major

delays in the contract closeout process. If a contract clause makes the contractor liable and property is lost, damaged or destroyed, the government must negotiate a settlement with the contractor. It is important to examine whether lost, damaged, or destroyed property is a significant problem and determine what redesigns can be recommended to make the process more efficient and timely?

- **How can the responsibilities currently performed by DFAS be collapsed into a case manager?** The current process relies heavily on action by the paying agent, DFAS. To reduce job specialty, is it realistic and reasonable to train case managers/ACOs to perform inherently DFAS functions? Or is it more sensible to place a DFAS member geographically on the DCMA team, vice having them work remotely, to help reconcile contracts and facilitate contract closeout?
- **How do DCMA/DCMCs account for the Contract Administrative Service (CAS) funds that are provided with FMC cases?** FMS cases have up to a 1.5% charge associated with the case. Those funds support Contract Administrative Services (CAS). DCMA is the biggest recipient of CAS funds, accounting for \$105M for FY 2001. How are those funds accounted for and tracked in to providing services to FMS contracts exclusively?
- **How can reconciliation procedures be modified to eliminate the contract closeout backlog?** Often funds are either overpaid or underpaid on physically completed contracts. This results from several factors, including short paid invoices, rate adjustments or fees not collected. In some cases, the time and resources applied to reconciliation exceed the amount uncovered to reconcile the contract. Should there be a "write-off" for imbalances below a certain dollar threshold. How will this affect contract closeout?

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